FACT SHEET FOR NPDES PERMIT WA0037953
FACILITY NAME CASCADE POLE AND LUMBER COMPANY

SUMMARY

Issuance Date: February 7, 2002

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INTRODUCTION

The Federal Clean Water Act (FCWA, 1972, and later modifications, 1977, 1981, and 1987) established water quality goals for the navigable (surface) waters of the United States. One of the mechanisms for achieving the goals of the Clean Water Act is the National Pollutant Discharge Elimination System of permits (NPDES permits), which is administered by the Environmental Protection Agency (EPA). The EPA has delegated responsibility to administer the NPDES permit program to the State of Washington on the basis of Chapter 90.48 RCW which defines the Department of Ecology's authority and obligations in administering the wastewater discharge permit program.

The regulations adopted by the State include procedures for issuing permits (Chapter 173-220 WAC), water quality criteria for surface and ground waters (Chapters 173-201A and 200 WAC), and sediment management standards (Chapter 173-204 WAC). These regulations require that a permit be issued before discharge of wastewater to waters of the state is allowed. The regulations also establish the basis for effluent limitations and other requirements which are to be included in the permit. One of the requirements (WAC 173-220-060) for issuing a permit under the NPDES permit program is the preparation of a draft permit and an accompanying fact sheet. Public notice of the availability of the draft permit is required at least thirty days before the permit is issued (WAC 173-220-050). The fact sheet and draft permit are available for review (see Appendix A--Public Involvement of the fact sheet for more detail on the Public Notice procedures).

The fact sheet and draft permit have been reviewed by the Permittee. Errors and omissions identified in this review have been corrected before going to public notice. After the public comment period has closed, the Department will summarize the substantive comments and the response to each comment. The summary and response to comments will become part of the file on the permit and parties submitting comments will receive a copy of the Department's response. The fact sheet will not be revised. Comments and the resultant changes to the permit will be summarized in Appendix D--Response to Comments.

GENERAL INFORMATION	
Applicant	Cascade Pole and Lumber Company
Facility Name and Address	Cascade Pole and Lumber Company 1640 Marc Street, Tacoma, WA 98421-2939
Type of Facility:	Wood Preserving with creosote, pentachlorophenol and chromated copper arsenate solution
SIC Code	2491
Discharge Location	001: Lincoln Avenue Ditch: Latitude: 47° 15' 18" N, Longitude:122° 24' 30" W. 002: Puyallup River: Latitude: 47° 15' 20" N, Longitude: 122° 24' 51" W.
Water Body ID Number	001: Blair waterway via Lincoln Avenue Ditch: WA-10-0020 002: Puyallup River: WA-05-1003

BACKGROUND INFORMATION

DESCRIPTION OF THE FACILITY

Cascade Pole and Lumber Company (CPLC) operates a wood preserving facility in Tacoma, Washington. No process related wastewater is discharged from the site. The only discharge is storm water. The facility has two distinct drainage areas. Storm water from one area drains to the Puyallup River and the other area drains to the Lincoln Avenue Ditch via City of Tacoma storm sewer.

HISTORY

The previous permit was issued to the facility on June 30, 1993. The permit was modified on August 1, 1996, to extend the deadline for meeting the final effluent limitations. The permit was due to expire on June 30, 1998. The permit has since been administratively extended until it is renewed. Since the issuance of the previous permit in 1993, CPLC has implemented the required "best management practices" (BMPs), developed a "stormwater pollution prevention plan" (SWPPP), prepared a spill plan, and a solid waste control plan. Monthly discharge monitoring reports were submitted when due. Annual progress reports on compliance with final limits were also submitted. CPLC completed an AKART study on potential treatment systems for stormwater. This was followed by a mixing zone study for the outfalls.

INDUSTRIAL PROCESS

Activities at Cascade Pole Company include debarking, sizing and framing, incising, staining, treating, and distributing finished lumber products to customers. Treated wood products manufactured at the site include utility poles, pilings and dimension lumber used for decking, fencing, and other similar applications. Wood products are pressure treated or dip treated with either water or oil-based preservative formulations, as described below. Wood products are transferred in and out of treating cylinders (retort) in trams on tracks. A transfer table (Subpart W drip pad system) conveys the wood products to and from the retorts and the Subpart W drip pads located adjacent to the treatment plant. Depending on customer specifications, poles are either thermally treated with creosote or pressure treated with pentachlorophenol.

Poles treated with pentachlorophenol or creosote are stored on site in the treated pole storage area that drains to outfall 001 (to Lincoln Avenue Ditch). Dimension lumber, which is pressure treated with a water borne chromated copper arsenate (CCA) solution, is first allowed to drip in an EPA-required, covered Subpart W drip pad and storage area. Excess CCA collected during drippage is directed to a sump on the drip pad. The sump is equipped with a pump activated by a level switch. The collected material is pumped through a series of bag filters, then back into the CCA process tank for reuse. Lumber removed from the drip pad is temporarily stored on a paved surface in the drip pad building. Lumber removed from the CCA building is packaged and paper wrapped prior to relocation to the treated wood storage yard. A small amount of material is not wrapped due to size limitations of the packaging equipment and customer preference (e.g., odd-shaped playground equipment pieces, lattice). Storm water from around and within the CCA building perimeter is directed to a series of catch basins which are gravity fed to a collection sump equipped with a pump activated by a level switch. The collected material is pumped through a series of bag filters, then back into the CCA process tank for reuse. Storm water from this treated wood storage yard drains to Outfall 002."

CPLC has modified the storm drainage system within the Outfall 002 drainage area to allow storm water collected in the majority of the basin (approximately 12 acres or 55 percent of the Outfall 002 basin) to be pumped back to a series of storm water storage tanks and ultimately to the CCA make-up water tank for reuse in the treatment process. The area of the Outfall 002 basin that can be pumped back includes areas in the immediate vicinity of the treating cylinders and drip pads, treated storage areas, and some untreated wood storage areas. It is CPLC's policy to retain and reuse as much storm water runoff generated on site as possible. In 1998, CPLC used approximately 23,000 gallons a day of storm water, 7 days a week, for approximately 37.5 weeks (75 percent of 50 weeks). This resulted in a total usage of approximately 6.04 million gallons of storm water in the treatment operations. Recent modifications to CPLC's treatment

plant will allow for an additional 1-2 million gallons of storm water to be recycled a year resulting in almost 50 percent reuse rate for storm water generated on site.

The treating cylinders and tank farm are equipped with secondary containment, which isolates the chemicals in these areas from the storm drain system. Secondary containment consists of reinforced concrete floors and walls sufficient in height to contain spills. In addition, the transfer table (Subpart W drip pad system) is equipped with steel drip collection pans which collect drippage from the treated wood products as they are conveyed on the table between the retorts and the drip pads. In November of 1999, CPLC completed the installation of a concrete slab in the transfer table pit eliminating any potential contact of treating solutions with soil. South of the pullout area is the butt vat used for non-pressure treatment of pole ends with creosote. The butt vat is a concrete structure approximately 13 feet below grade and was steel lined in 1984. During the initial process of pressure treating the poles with pentachlorophenol, a vacuum is drawn to remove moisture from the poles before injecting the PCP. The moisture first collects in the condensate tank and then it is directed, along with PCP drip pad storm water, to a settling tank followed by a bag filter and two oil/ water separators. The PCP recovered at the oil/water separator is re-used at the retorts and the water is recycled back to the cooling tower. Some of the water in the cooling tower evaporates, and the rest is sent back to cool the condensate emanating from the retort.

The boiler blowdown water is reused as makeup water for CCA treating solution. Laboratory wastewater is stored in drums before sending it to an approved treatment disposal and storage facility (Thor Bendicksen, April 1, 1993, personal communication). Cascade Pole does not use water seal pumps. Both storm water and vehicle wash water discharging to outfall 001 is first treated in the treatment system discussed later in the section on *Technology-based Effluent Limitations*.

Lumber staining is done with a water based latex stain in an enclosed facility. All washwater generated during the process is held in tanks and re-used as make up water for new stain.

Dedicated forklifts at the drip pads are fueled every day. Before leaving the pad, the forklifts are hosed-off and the resulting water is collected and re-used. The forklifts are washed once a week. The wash water is also re-used as make-up water.

TREATING SOLUTIONS

Medium aromatic treating oil, creosote (liquid), and CCA solution (60% concentrate in water) are delivered to the product unloading pad on site by tanker truck, where the solutions are pumped into storage tanks located in the tank farm. Pentachlorophenol is delivered in solid blocks and dissolved in the carrier oil for use. The product unloading pad consists of a reinforced concrete pad sloped to a center sump. Entrance and exit ramps form 6” berms across each end (east and west), and the entire area is covered with a roof and walls on each side (north and south).

DISCHARGE OUTFALL

Outfall 001 collects runoff from the creosote and pentachlorophenol treated wood storage areas. While located within the Outfall 001 basin, the storm water from the retort/drag-out area does not discharge to Outfall 001, but is collected for reuse. Storm water runoff from Outfall 001 enters the Lincoln Avenue Ditch via the City of Tacoma storm drain. Outfall 002 collects storm water primarily from a CCA treated wood and whitewood storage area, and maintenance shop area. Outfall 002 drains into the Puyallup River.

PERMIT STATUS

The previous permit for this facility was issued on June 30, 1993. The permit expired on June 30, 1998. The permit has been administratively extended since then. The permit contained the following effluent limitations for both outfalls 001 and 002. These limitations, except for oil and grease, were based on water quality standards.

Table 1: Effluent limitations in the permit (Daily Maximum)

Oil & grease	10 mg/L
Arsenic	360 µg/L
Chromium	16 µg/L
Copper	18 µg/L
pH	between 6 to 9
pentachlorophenol	9 µg/L

The permit also contained a compliance schedule, for the duration of the permit, to meet the effluent limitations for chromium, copper and pentachlorophenol. During this compliance schedule, interim limitations were imposed on these pollutants as follows:

Table 2: Interim limitations

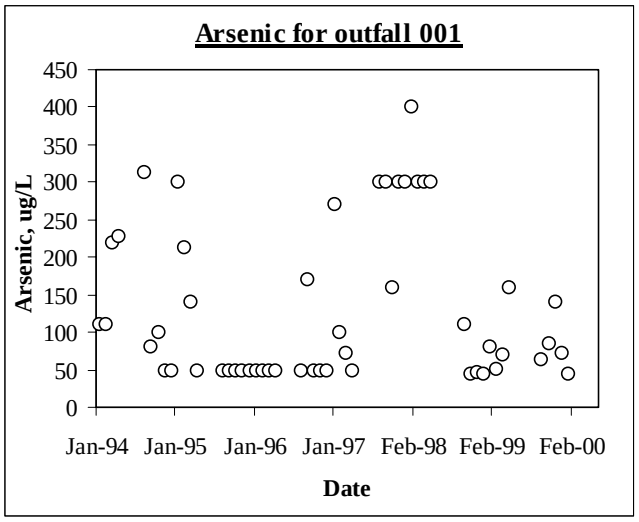
Chromium	1030 µg/L
Copper	540 µg/L
pentachlorophenol	215 µg/L

An application for permit renewal was submitted to the Department on January 6, 1998, and accepted by the Department on August 4, 1998.

SUMMARY OF COMPLIANCE WITH THE PREVIOUS PERMIT

The facility last received an inspection on March 27, 1998. The figures below show the compliance status of the facility with the various effluent limitations**.** Outfall 001 drains an area where most of the creosote and pentachlorophenol treated wood is stored. Outfall 002 drains an area where CCA treated wood are stored.

Figure 2. Effluent concentrations of pollutants with effluent limitations



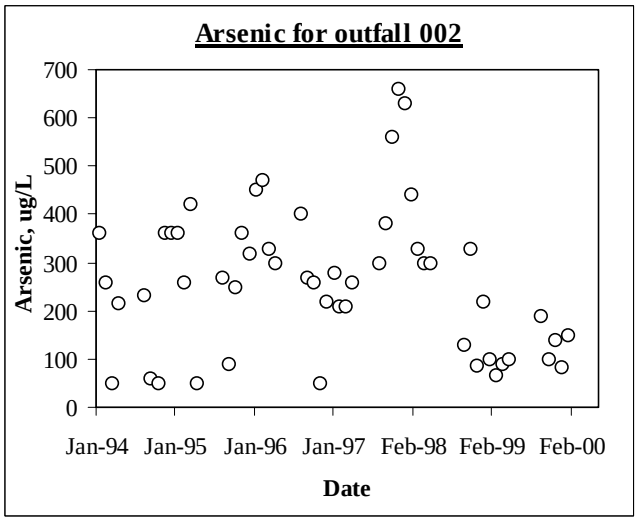
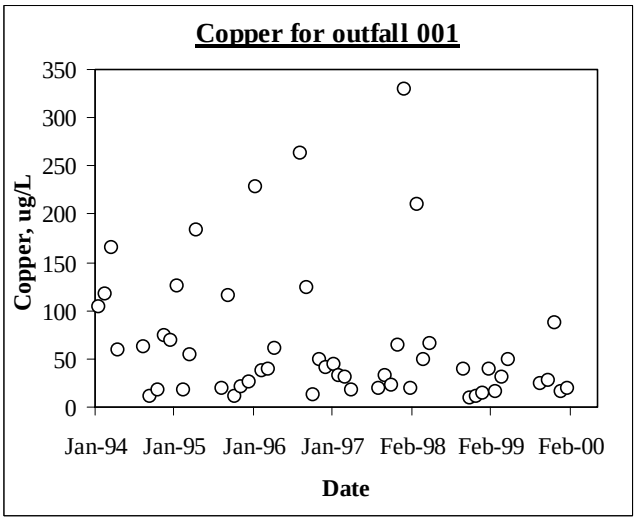
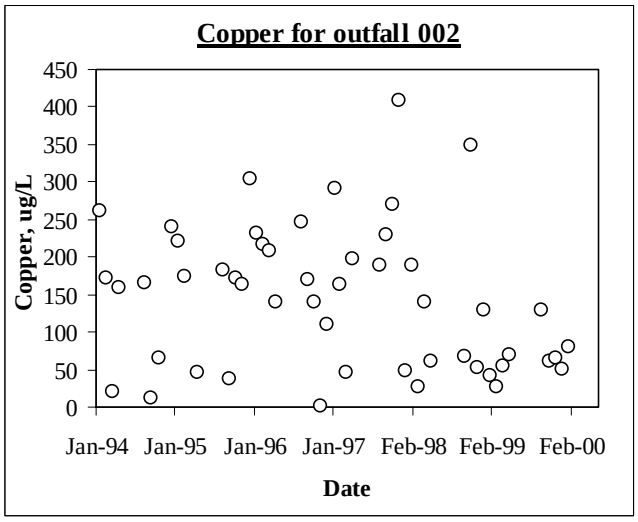
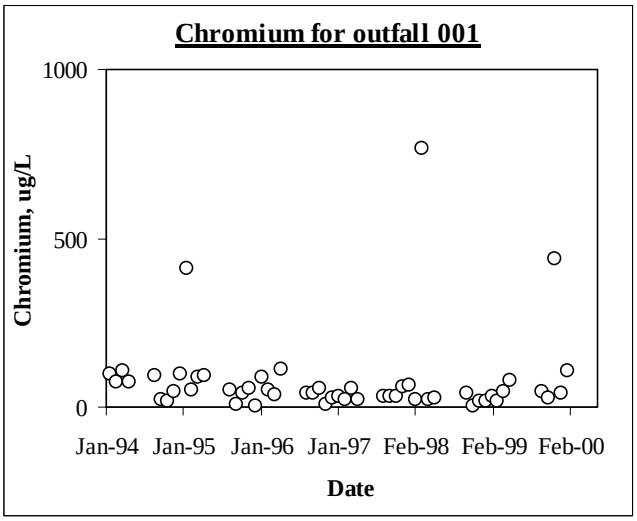
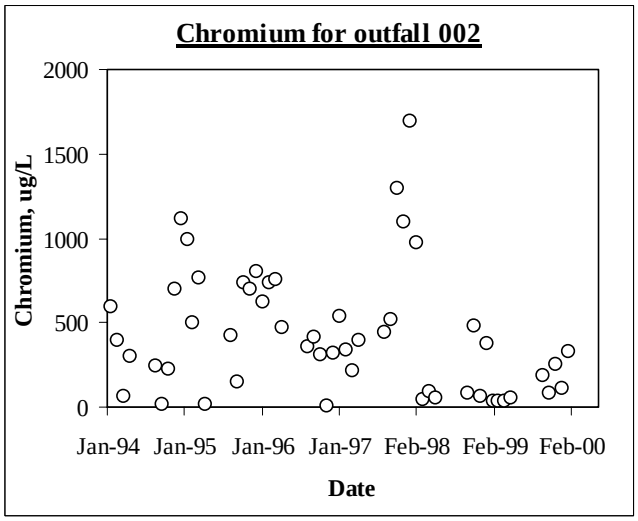


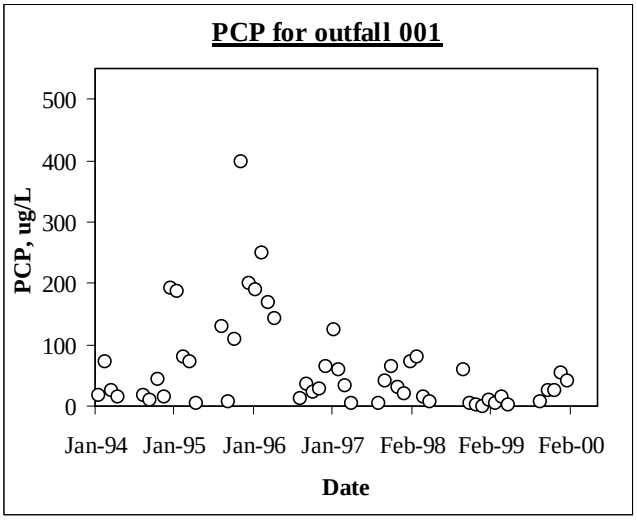
Figure 2 (continued). Effluent concentrations of pollutants with effluent limitations











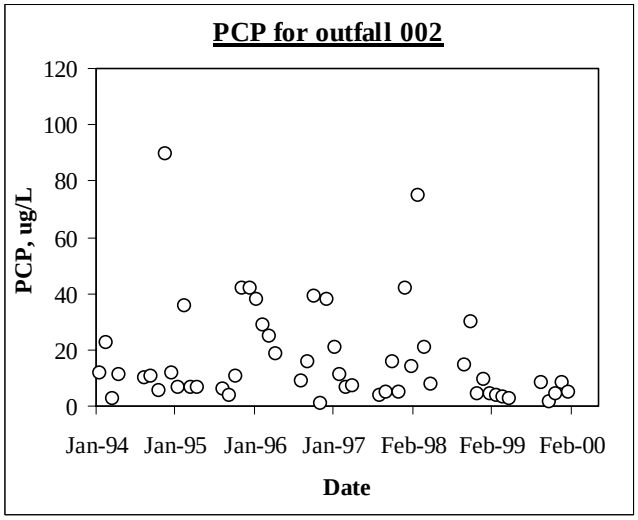
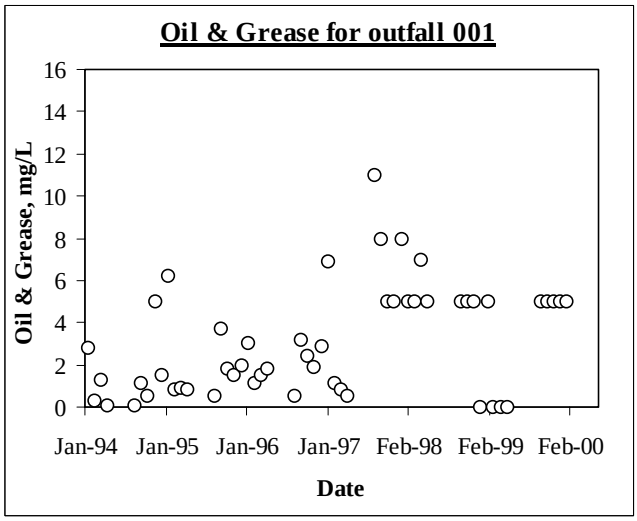
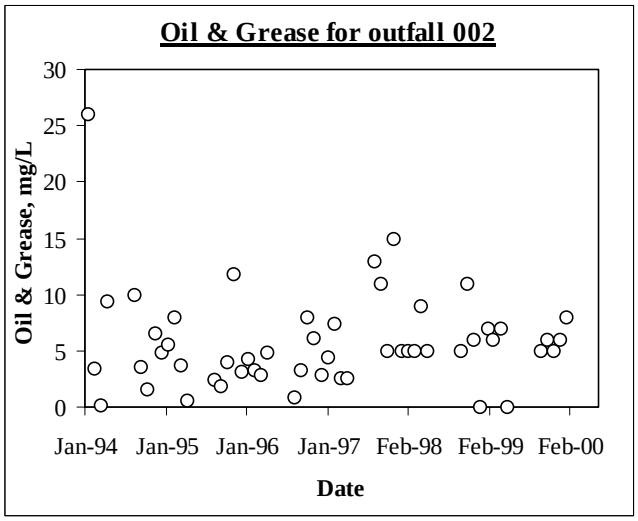
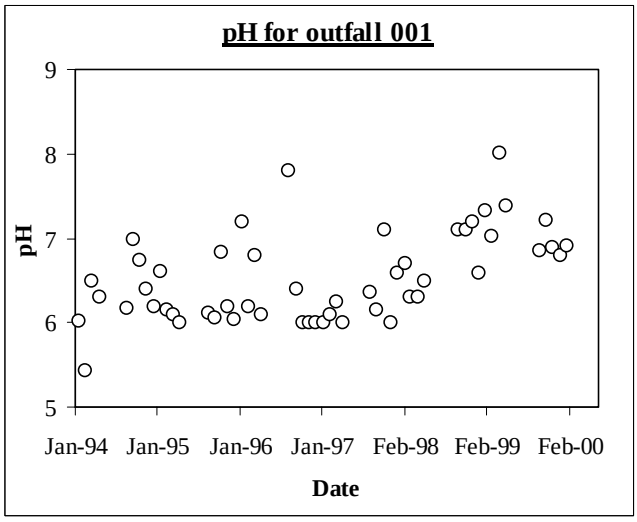
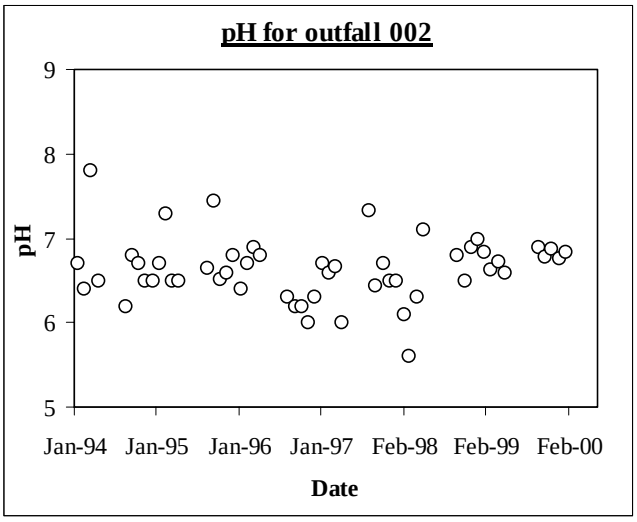


Figure 2 (continued). Effluent concentrations of pollutants with effluent limitations









COMPLIANCE WITH ARSENIC LIMITATION

The permit required that an effluent limitation of 360 μg/L be met at both outfalls 001 and 002 from the effective date of the permit. The excursions are shown below. This equates to approximately 98% compliance at outfall 001 and 83% compliance at outfall 002**.** No excursions have occurred since February 1998.

Date	Outfall 001	Outfall 002
4/1/95	----	420
2/1/96	----	450
3/1/96	----	470
9/1/96	----	400
10/1/97	----	380
11/1/97	----	560
12/1/97	----	660

Date	Outfall 001	Outfall 002
1/1/98	----	630
2/1/98	<400*	440

* Detection level above the effluent limitation of 360 ug/L

COMPLIANCE WITH CHROMIUM LIMITATION

The permit required that an interim effluent limitation of 1030 µg/L be met at both Outfalls 001 and 002 from the effective date of the permit. The excursions are shown below. No excursions have occurred since January 1998. Based on effluent data gathered in the previous permit cycle, effluent concentrations were at or below the interim limit of 1030 µg/L 100 percent of the time at outfall 001 and 92.5 percent of the time at outfall 002.

A final limitation of 16 µg/L was required to be met at the expiration and renewal of the previous permit. Effluent concentrations were at or below the final chromium limit of 16 µg/L only 7.5% of the time at outfall 001 and 3.8% of the time at outfall 002. Thus, based on existing best management practices, the water quality standard can not be achieved. The facility completed an engineering report on compliance with water quality standard for chromium and other pollutants. This will be addressed later in this factsheet.

Date	Outfall 001	Outfall 002
1/1/95	----	1120
11/1/97	----	1300
12/1/97	----	1100
1/1/98	----	1700

COMPLIANCE WITH COPPER LIMITATION

The permit required that an interim effluent limitation of 540 µg/L be met at both outfalls 001 and 002 from the effective date of the permit. A final limitation of 18 µg/L was required to be met at the expiration and renewal of the previous permit. During the previous permit cycle, the interim limit was never exceeded. However, effluent concentrations were at or below the final limitation of 18µg/L only 19% of the time for Outfall 001, and 4% of the time at Outfall 002. Thus, based on existing best management practices the water quality standard can not be achieved. The facility completed an engineering report on compliance with water quality standards for copper and other pollutants. This will be addressed later in this factsheet.

COMPLIANCE WITH PENTACHLOROPHENOL (PCP) LIMITATION

The permit required that an interim effluent limitation of 215 µg/L be met at both Outfalls 001 and 002 from the effective date of the permit. A final limitation of 9 µg/L was required to be met at the expiration and renewal of the previous permit. At Outfall 001, only two excursions of the PCP limitation occurred: one in December 1995 at 400 µg/L, and the other in March 1996 at 250 µg/L. At outfall 002 no excursions of the interim limitation was observed. However, effluent concentrations were at or below the final limitation of 9µg/L only 20.8% of the time for outfall 001 and 47% of the time at outfall 002. Thus, based on existing best management practices the water quality standard can not be achieved. The facility completed an engineering report on compliance with water quality standard for PCP and other pollutants. This will be addressed later in this factsheet.

COMPLIANCE WITH PH LIMITATION

The permit required a pH limitation of between 6 and 9 at both the outfalls. Outfall 001 had one excursion at a pH of 5.43 in March 1994. Outfall 002 also had one excursion at a pH of 5.6 in March 1998. Thus, both Outfall 001 and Outfall 002 had 98 % compliance with the pH limitation.

COMPLIANCE WITH OIL AND GREASE LIMITATION

The permit required an effluent limitation of 10 mg/L. The excursions are shown below. Thus, there was a 98% and 88.7% compliance with the oil and grease limitation at Outfall 001 and 002, respectively. It should be noted that all runoff to Outfall 001 is conveyed through an oil/water separator; a portion of the storm water runoff to Outfall 002 (from the vicinity of the maintenance shop) is conveyed through an oil/water separator.

Date	Outfall 001	Outfall 002
2/1/94	----	26
12/1/95	----	11.8
9/1/97	11	13
10/1/97	----	11
12/1/97	----	15
11/1/98	----	11

STORM WATER CHARACTERIZATION

The proposed storm water discharge is characterized for the following regulated parameters. The data is obtained from the discharge monitoring reports since January 1996. From January 1996 to February 2000, thirty six (36) storm events have been sampled by CPLC. In addition, two additional storm events have been sampled at Outfall 001 for the Dioxin and Furan study completed and submitted in 1999. Tables 3 and Table 4 show an evaluation of data collected during this time. It should be noted that Outfall 001 collects runoff from the creosote and pentachlorophenol treated wood storage areas. This outfall enters the headworks of the Lincoln Avenue Ditch. Outfall 002 collects storm water primarily from a CCA treated wood and whitewood storage area, and maintenance shop area. Outfall 002 discharges to Puyallup River.

Table 3 indicates that the concentrations of metals (arsenic, chromium, and copper) are higher at outfall 002 relative to Outfall 001. This was expected, since most CCA treated wood is stored in the drainage area for Outfall 002. Similarly, as was expected, the pentachlorophenol (PCP) concentrations at outfall 001 are higher than those at Outfall 002. Outfall 001 drains an area where PCP and creosote treated wood are stored. However, Outfall 001 has a treatment system (activated carbon and mixed media filter) for the removal of PCP and Outfall 002 does not. It should also be noted that the PAH concentration at Outfall 001 is significantly lower than that at Outfall 002. This is just the opposite for PCP.

As expected, the individual PAHs are also relatively higher at Outfall 002 compared to Outfall 001 (see Table 4 below). It should be noted that an activated carbon and a mixed media filtration system is in place to treat discharge at Outfall 001 but not at Outfall 002.

Table 3: Storm water Characterization for Outfalls 001 and 002

Parameter	Outfall 001				Outfall 002			
	Mean	99th%	Max	Min	Mean	99th%	Max	Min
Arsenic, µg/L	133	365	400	44	270	650	660	50
Chromium, µg/L	74	655	770	7	409	1560	1700	7
Copper, µg/L	62	307	330	10	146	389	410	2
Oil and Grease, mg/L	4	10	11	1	6	14	15	1
pH	7	8	8	6	7	7	7	6
Pentachlorophenol, µg/L	54	233	250	1	17	63	75	1
2,4,6-Trichlorophenol, µg/L			0.71					
2,3,4,6-Tetrachlorophenol, µg/L			2.8					
TSS, mg/L	21	371	520	ND	139	1623	2200	ND
PAH, µg/L	16	73	82	ND	119	622	747	ND

Table 4. Maximum PAH concentrations (µg/L) at Outfalls 001 and 002

Polynuclear Aromatic Hydrocarbons	Outfall 001	Outfall 002
Naphthalene	0.19	1.1
Acenaphthylene	0.18	0.54
Acenapthene	0.13	2.3
Fluorene	0.23	90
Phenanthrene	3.7	120
Anthracene	1.2	17
Fluoranthene	9.9	190
Pyrene	8.2	110
Benzo(a)anthracene	5	44
Chrysene	6	66
Benzo(b)fluoranthene	9.3	74
Benzo(k)fluoranthene	3.4	35
Benzo(a)pyrene	4.7	48
Indeno(1,2,3-cd)pyrene	4.5	22
Dibenz(a,h)anthracene	0.39	2.3
Benzo(g,h,i)perylene	4.8	43

A dioxin and furan study was conducted by CPLC between November 1998 and March 1999. A report was submitted to Ecology in April of 1999. This study was done as per an Order issued by Ecology in October 1998. The study requirements were contained in the previous NPDES permit Condition S7. For the purposes of this study, two samples were collected at Outfall 001, one in November 1998 and the other in March 1999. The following table (Table 5) summarizes the results of the study. Both dioxin and furan data are included in Table 5. Note that neither 2,3,7,8 TCDD nor 2,3,7,8 TCDF were detected in the two samples.

Table 5: Dioxin data collected during the Dioxin and Furan Study, 1999

Pollutant	Conversion Factor	Concentrations measured (ppq)		Equivalent concentrations based on conversion factor, TEF (ppq)	
		November 1998	March 1999	November 1998	March 1999
Dioxins					
2,3,7,8-TCDD	1	<10	<9.3 J		
1,2,3,7,8-PeCDD	0.5	<50	<47		
1,2,3,4,7,8-HxCDD	0.1	<50 J	<47		
1,2,3, 6,7,8-HxCDD	0.1	<50 J	84.1		8.41
1,2,3,7,8,9-HxCDD	0.1	<50 J	49		4.9
1,2,3,4,6,7,8-HpCDD	0.01	1820	3510	18.2	35.1
OCDD	0.001	18160	33020	18.16	33.02
Furans					
2,3,7,8-TCDF	0.1	<10	<9.3		
1,2,3,7,8-PeCDF	0.05	<50	<47		
2,3,4,7,8-PeCDF	0.5	<50	<47		
1,2,3,4,7,8-HxCDF	0.1	<50 J	<47 JB		
1,2,3, 6,7,8-HxCDF	0.1	<50 J	<47 J		
2,3,4,6,7,8-HxCDF	0.1	<50 J	<47 J		
1,2,3,7,8,9-HxCDF	0.1	<50	<47		
1,2,3,4,6,7,8-HpCDF	0.01	452	967	4.52	9.67
1,2,3,4,7,8,9-HpCDF	0.01	<50 J	85.1		0.851
OCDF	0.001	2820	5850	2.82	5.85
			Total TEF, ppq	**43.7**	**97.8**

TEF = Toxicity Equivalent Factor.

Factor = As per U.S. EPA 1989. Interim Procedures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxins and Dibenzofurans (CDDs and CDFs) and 1989 Update. EPA/6625/3-89/016

J = indicates analytical value is an estimate

B = indicates analyte was detected in method blank

DIOXINS:
TCDD = Tetrachlorodibenzo-*p*-dioxin
PeCDD = Pentachlorodibenzo-*p*-dioxins
HxCDD = Hexachlorodibenzo-*p*-dioxins
HpCDD = Heptachlorodibenzo-*p*-dioxins
OCDD = Octachlorodibenzo-p-dioxins

FURANS:
TCDF = Tetrachlorodibenzofurans
PeCDF = Pentachlorodibenzofurans
HxCDF = Hexachlorodibenzofurans
HpCDF = Heptachlorodibenzofurans
OCDF = Octachlorodibenzofurans

PROPOSED PERMIT LIMITATIONS

Federal and State regulations require that effluent limitations set forth in a NPDES permit must be either technology- or water quality-based. Technology-based limitations are based upon the treatment methods available to treat specific pollutants. Technology-based limitations are set by regulation or developed on a case-by-case basis (40 CFR 125.3, and Chapter 173-220 WAC). Water quality-based limitations are based upon compliance with the Surface Water Quality Standards (Chapter 173-201A WAC), Ground Water Standards (Chapter 173-200 WAC), Sediment Quality Standards (Chapter 173-204 WAC) or the National Toxics Rule (Federal Register, Volume 57, No. 246, Tuesday, December 22, 1992). The more stringent of these two limits must be chosen for each of the parameters of concern. Each of these types of limits is described in more detail below.

The limits in this permit are based in part on information received in the application. The effluent constituents in the application were evaluated on a technology- and water quality-basis. The limits necessary to meet the rules and regulations of the State of Washington were determined and included in this permit. Ecology does not develop effluent limits for all pollutants that may be reported on the application as present in the effluent. Some pollutants are not treatable at the concentrations reported, are not controllable at the source, are not listed in regulation, and do not have a reasonable potential to cause a water quality violation. If significant changes occur in any constituent, as described in 40 CFR 122.42(a), the Permittee is required to notify the Department of Ecology.

TECHNOLOGY-BASED EFFLUENT LIMITATIONS

PROCESS WASTEWATER

The United States Environmental Protection Agency (EPA) has promulgated effluent guidelines and standards for the timber products processing point source category in Code of Federal Regulations 40 CFR Part 429. Cascade Pole and Lumber Company falls under Subcategory F of 40 CFR Part 429 (dealing with pressure wood preserving treatment processes employing water borne inorganic salts and all non-pressure wood preserving treatment processes); and Subcategory H of 40 CFR Part 429 (dealing with the Boulton process of conditioning wood prior to treatment). The Boulton process is used by Cascade Pole and Lumber Company for pressure treating poles with pentachlorophenol. The effluent limitation representing "best practicable control technology currently available" (BPT) and "best available technology economically achievable" (BAT) for direct dischargers within these two Subcategories is zero discharge of process wastewater pollutants into navigable waters. This is considered equivalent to "all known, available, and reasonable methods of prevention, control, and treatment" (AKART) for this industry under State laws.

Process wastewater is defined in 40 CFR Part 429.11. The term "process wastewater" specifically excludes non-contact cooling water, material storage yard runoff (either raw natural or process wood storage), and boiler blowdown. However, these wastewaters must be authorized in a permit prior to discharge into the waters of the state.

For the purposes of this permit, process wastewater includes all wastewaters generated as part of the conditioning of the wood in the treatment cylinder. Other sources of process wastewater include, but are not limited to, preservative formulation; recovery and regeneration wastewater; water used to wash excess preservative from the surface of preserved wood; and condensate from drying kilns used to dry preserved or surface protected lumber. Any rainwater or storm water which falls in the retort area, drip pad area, or tank farm area is also considered process wastewater.

Discharge of only storm water from white wood or treated product storage areas is covered in this permit.

STORM WATER

Technology-based limitations for storm water discharge are based on an evaluation of AKART applicable to the storm water discharge. The control technology in reducing pollutants in the storm water is generally through the application of "best management practices" (BMPs). However, at the CPLC site BMPs alone did not reduce the pollutant concentrations to below water quality standards. This is based on an evaluation of effluent concentrations in the previous permit cycle, as presented in Figure2. A discussion on best management practices implemented and currently practiced by CPLC is presented below:

Best Management Practices

Best management practices (BMP's) are a primary component of the AKART requirement for storm water discharges and are the primary emphasis of storm water contaminant control under the federal program. CPLC has implemented numerous practices and facility improvements to control the potential for storm water contamination from site operations associated with the storage and treatment of wood products. The site operates under clean, organized conditions, where a number of operational and structural BMPs are used. Significant BMPs implemented or tested by CPLC to date are summarized below.

Site Paving: Since 1992, CPLC has undertaken a program to pave substantial portions of the site. Paving of the storage areas was completed in 1995. Currently, 100 percent of the Outfall 001 basin and approximately 75 percent of the Outfall 002 basin are paved, roofed or otherwise covered. In addition, the majority of the 001 basin pavement has been coated with an asphalt sealant. Costs for site paving were approximately $1.5 million.

Storm Water Storage Tanks: In 1995, CPLC purchased 11 storage tanks for use in temporarily storing storm water collected from the area in the vicinity of the wood treatment plant (immediately north of the retorts and transfer table). The 11 tanks have a total storage capacity exceeding 240,000 gallons. Storm water collected in these tanks is reused as CCA make-up water. Costs for tank installation were approximately $40,000.

Berms, Curbs, And Covers: The process areas are divided into containment areas; as described in CPLC's site *Stormwater Pollution Prevention Plan* (CPLC, 1994). The containment areas allow for separate collection, management, and reuse of storm water that contacts the tanks and equipment. Storm water collected in these areas is not combined with the general site runoff that discharges off site via Outfalls 001 or 002.

The chemical unloading area is roofed and paved to isolate storm water from this area. It is further equipped with a 500-gallon blind sump. The hazardous waste accumulation area is roofed and contained by a 6-inch curb.

In 1992, CPLC completed construction of roofs over the drip pads. These roofs cover approximately 24,600-square feet of drip pad area. Costs for drip pad and roof construction were approximately $610,000. An additional 3,600-square-foot roof extension was constructed over the packaging unit.

pH CONTROLLER: A pH controller was installed at the basin 001 storm water treatment system to assure that storm water discharged from Outfall 001 maintains a pH within the permitted range of 6 to 9. An NaOH solution is metered as necessary to maintain a pH above 6.

Plastic Covers: Stacks of treated lumber are covered with plastic to reduce the potential for storm water contact. In addition, at least 50 percent of the CCA-treated lumber is wrapped with plastic-coated paper and an additional 20 to 30 percent of CCA-treated lumber is stored under roof cover. Annual costs for covering the lumber (including labor) are approximately $310,000.

Street Sweeper: The paved surface allows CPLC to operate a street sweeper to control and remove particulate and debris that accumulates on the surface and may otherwise be conveyed via storm water runoff. An employee is dedicated almost full-time to continuously sweep the site and place the recovered solids in drums. Cost of the street sweeper was approximately $100,000.

Metal And Concrete Skids: Historically, PCP-treated poles were used as skids for storage of treated utility poles. These were replaced with metal and concrete skids.

Dedicated Equipment: CPLC has a dedicated forklift for operation of the Subpart W drip pad (CCA). If the forklift must leave the CCA building, which covers the CCA drip pad, then the driver must first hose down the wheels with water. The wash water is recovered and reused as CCA make-up water.

Catch Basin Inserts: In 1995, CPLC tested catch basin inserts from the local vendor to determine their ability to remove solids and wood debris from storm water runoff. The units were found to remove particulate; however, they were labor intensive and caused flooding on several occasions during the test period (CPLC, 1996).

Storm Water Pollution Prevention Plan (SWPPP): A site-specific SWPPP was developed and implemented by CPLC. Components of the plan include the identification of potential pollutant sources and activities, site-specific BMPs, contingency planning and release prevention, preventative maintenance, and employee training.

Employee Training: The annual Worker Right-To-Know training for site employees includes an NPDES compliance component. CPLC has informed its employees about the importance of NPDES compliance. This training is required by the site's NPDES permit and is conducted at least annually.

In summary, CPLC has implemented BMPs as described in the site SWPPP and as required by the site NPDES permit. In addition, CPLC is also performing the majority of the BMPs listed in the NPDES Storm Water Multisector General Permit for Industrial Activities, Timber Products Facilities (60 FR 50804). Examples of the few federal BMPs that CPLC has not implemented are the use of silt fences and rip rap check dams in drainage ways, which are not necessary or appropriate for the site. While this federal permit is not applicable to the CPLC facility, implementation of the BMPs described in the permit indicate that CPLC is achieving the BMPs contemplated by EPA as effective pollution control options for the timber product facilities. CPLC has also implemented the BMPs identified by Ecology in developing the state model NPDES permit for wood preserving facilities, and has used the *Storm Water Management Plan for the Puget Sound Basin* in development of the SWPPP and identification of BMPs. CPLC currently meets the zero discharge AKART requirement for storm water identified as Category 1 in the model permit. Category 1 storm water is runoff associated with the retort, drip pad, and tank farm areas and is subject to Federal Effluent Guidelines which require zero discharge of process wastewater pollutants.

Stormwater Treatment

CPLC prepared an engineering report, dated May 7, 1997, for potential treatment of storm water for meeting water quality standards for arsenic, copper, chromium and pentachlorophenol. A summary of the engineering report is presented below:

1. Current treatment system for storm water discharging at Outfall 001 consists of oil/water separator followed by 4-mixed media filter (anthracite, sand and gravel) and 4-granulated activated carbon filters (GAC). pH adjustment is also done as necessary. The carbon is replaced when PCP removal rate is less than 50%.

   In the treatment system, the storm water first enters a four-compartment separator. The first compartment is used to separate large solids, the second to settle out smaller solids ("sinkables"), and the third to separate floatables. The fourth compartment has two sumps that collect storm water from the separator and pumps to the filter system. The filter system consists of four mixed media filters each followed by an activated carbon column. A PCP removal of 50% or less is considered

breakthrough for the carbon columns. pH adjustment is done before the filter system. The pH sensor/controller is hooked at the effluent end of the filter system. The outlet of the filter system also has a flow meter. The discharge from the filter system goes to the stormdrain that discharges into the Lincoln Avenue Ditch.

2. Treatability studies for removal of metals were conducted for Outfall 002. These studies included four possible treatment systems employing coagulation/sedimentation, iron co-precipitation, and proprietary adsorption media. Iron co-precipitation was shown in controlled, vendor bench-tests to achieve test results that were below the final effluent limit concentrations. However, metals removal achieved in bench tests cannot be considered indicative of a full-scale operation; bench tests are conducted solely to test feasibility and pilot testing would be necessary to assess full-scale system performance, reliability and cost. No full-scale systems are known to exist for treatment of metal bearing storm water runoff from wood preserving facilities. Additionally, the scientific literature for this technology indicates that achieving the final effluent limits would be difficult and that treated effluent concentrations would remain well above these limits. Regarding the proprietary adsorption media (ATA AQUA-FIX™), this technology also does not meet AKART criteria. There are no installations for the treatment of stormwater runoff from any industrial facility and this technology has little historical operational data to rely on. Ecology acknowledges that these technologies do not meet the test of a "known", "available" and/or "reasonable" method of treatment for storm water runoff from wood preserving sites.

None of the other wood treaters in Washington State are employing any such treatment system. The study was approved by Ecology, and the existing treatment and BMPs were considered to be AKART for the facility. Since the existing BMPs and treatment does not achieve the water quality standards, a mixing zone was tentatively granted pending completion of a follow up mixing zone study. The mixing study was completed with a final PLUMES model run including verification with ambient data submitted in December 1998. An initial 3-port diffuser was modified to an 8-port diffuser based on ambient monitoring data and meeting water quality standards at the edge of an acute mixing zone. An acute dilution factor of 85:1was predicted with the 8-port diffuser using the PLUMES computer mixing zone model and critical receiving water conditions (i.e., seasonal low river flow, low tide).

It should be noted that the engineering study did not evaluate treatment systems for Outfall 002 for the removal of PAH. Given the effluent concentrations at Outfall 002, some form of control technology must be implemented for reducing PAHs at this outfall. This will be required in the proposed permit.

Total Suspended Solids

Technology-based limit for total suspended solids (TSS) was proposed (50 mg/L) in the previous permit cycle with an option provided in the previous permit for the Permittee to conduct a site specific study to evaluate control technology to reduce TSS. The Permittee has chosen not to conduct this evaluation. Thus, by default, the technology-based effluent limitation for TSS is 50 mg/L.

Figure 3 shows the effluent concentration for TSS for both Outfalls 001 and 002. At Outfall 001 and Outfall 002 the TSS limitation (50 mg/L) has been historically met 94% and 55% of the time, respectively. It should be noted that Outfall 001 has a treatment system in place for the removal of solids. However, no TSS treatment system exists for Outfall 002. Currently, daily sweeping of the area is conducted as a "best management practice". However, further controls are necessary for achieving the TSS limitation of 50 mg/L. A one-year compliance schedule from the effective date of the permit is included in the permit to comply with the TSS limitation of 50 mg/L.

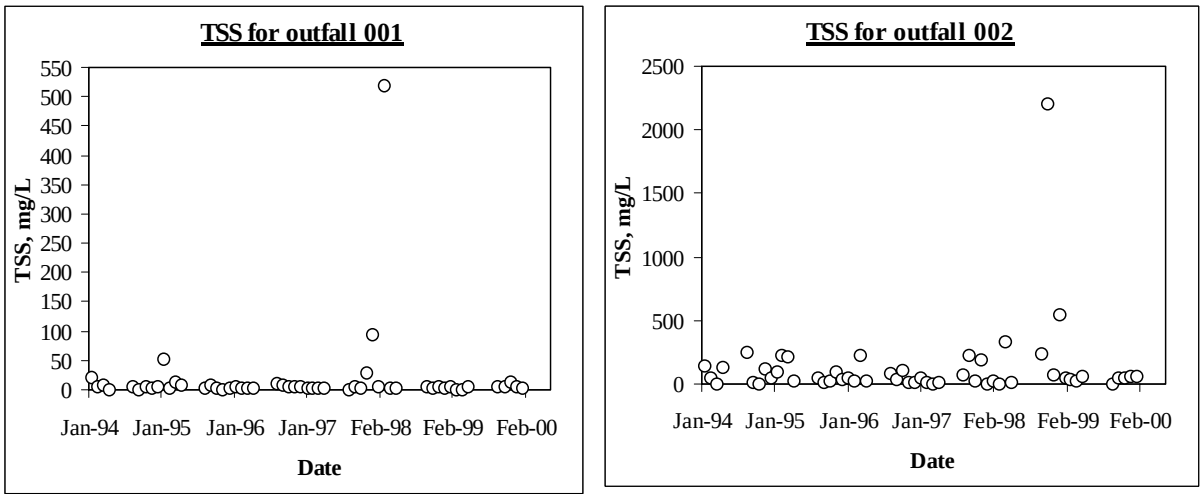


Figure 3: Effluent TSS at outfalls 001 and 002

Oil and Grease

The previous permit also established an oil and grease effluent limitation of 10 mg/L, as daily maximum. This is a technology-based limitation. This limitation would be retained in the proposed permit. This limitation reflects effluent quality that can be obtained through the use of a properly operated and maintained oil/water separator or other equivalent control technology. An oil/water separator is provided for outfall 001. Although a portion of the storm water runoff to outfall 002 (from the vicinity of the maintenance shop) is conveyed through an oil/water separator, no such treatment system exists for the total flow at outfall 002. As a result, a higher incidence of non-compliance with oil & grease limitation was observed at outfall 002 (see Figure 2). Thus, some form of oil & grease control system is necessary for the total flow at outfall 002. This may be either an oil/water separator for the total flow at outfall 002 and/or catch basin inserts that absorb oils.

Polynuclear Aromatic Hydrocarbons (PAH)

Both Tables 3 and 4 show that the concentration of total and individual PAHs are higher at outfall 002 compared to that at outfall 001. Most of the creosote contaminated storm water was previously presumed to go to outfall 001 via the existing oil/water separator and mixed media treatment system. However, Tables 3 and 4 suggest that this is not the case.

Technology based limit for PAH was proposed (100 μg/L) in the previous permit cycle with an option provided in the previous permit for the Permittee to conduct a site specific study to evaluate control

technology to reduce PAH. The Permittee has chosen not to conduct this evaluation. Thus, by default the technology-based effluent limitation for PAH is 100 μg/L.

Outfall 001 is in compliance with the PAH limitation approximately 96% of the time and outfall 002 only 62% of the time. Some form of control technology is necessary particularly at outfall 002 to achieve the technology-based limitation of 100 μg/L. It is expected that upon implementation of this control system, the individual PAH concentrations will also decrease. A one year compliance schedule from the effective date of the permit is included in the permit to comply with the PAH limitation of 100 μg/L.

Pentachlorophenol

Figure 2 shows the effluent pentachlorophenol concentrations during the last permit cycle. The graph shows that the PCP concentration at outfall 001 is in compliance with the 9 μg/L water quality standard only 20.8% of the time. Currently the carbon column is replaced when the removal efficiency is approximately 50%. However, improved removal of PCP by activated carbon can be accomplished by frequent replacement of carbon column (e.g. when the removal efficiency is 80% or some other number). The frequency of replacement should be governed by attaining a certain percent removal of PCP beyond which cost becomes unreasonable and/or water quality standard or a technology-based limitation is compromised. The permit requires the monitoring of PCP at both influent and effluent to the carbon column and to develop an "operation and maintenance manual" that will delineate the frequency of change of the carbon column.

SURFACE WATER QUALITY-BASED EFFLUENT LIMITATIONS

In order to protect existing water quality and preserve the designated beneficial uses of Washington's surface waters, WAC 173-201A-060 states that waste discharge permits shall be conditioned such that the discharge will meet established Surface Water Quality Standards. The Washington State Surface Water Quality Standards (Chapter 173-201A WAC) is a state regulation designed to protect the beneficial uses of the surface waters of the state.

NUMERICAL CRITERIA FOR THE PROTECTION OF AQUATIC LIFE

"Numerical" water quality criteria are numerical values set forth in the state of Washington's Water Quality Standards for Surface Waters (Chapter 173-201A WAC). They specify the levels of pollutants allowed in a receiving water while remaining protective of aquatic life. Numerical criteria set forth in the Water Quality Standards are used along with chemical and physical data for the wastewater and a receiving water to derive the effluent limits in the discharge permit. When surface water quality-based limits are more stringent or potentially more stringent than technology-based limitations, they must be used in a permit.

NUMERICAL CRITERIA FOR THE PROTECTION OF HUMAN HEALTH

The U.S. EPA has promulgated 91 numeric water quality criteria for the protection of human health that are applicable to Washington State (EPA 1992). These criteria are designed to protect humans from cancer and other disease and are primarily applicable to fish and shellfish consumption and drinking water from surface waters.

NARRATIVE CRITERIA

In addition to numerical criteria, "narrative" water quality criteria (WAC 173-201A-030) limit toxic, radioactive, or deleterious material concentrations below those which have the potential to adversely affect characteristic water uses, cause acute or chronic toxicity to biota, impair aesthetic values, or

adversely affect human health. Narrative criteria protect the specific beneficial uses of all fresh (WAC 173-201A-130) and marine (WAC 173-201A-140) waters in the State of Washington.

ANTIDEGRADATION

The State of Washington's Antidegradation Policy requires that discharges into a receiving water shall not further degrade the existing water quality of the water body. In cases where the natural conditions of a receiving water are of lower quality than the criteria assigned, the natural conditions shall constitute the water quality criteria. Similarly, when the natural conditions of a receiving water are of higher quality than the criteria assigned, the natural conditions shall constitute the water quality criteria. More information on the State Antidegradation Policy can be obtained by referring to WAC 173-201A-070.

The Department has reviewed existing records and is unable to determine if ambient water quality is either higher or lower than the designated classification criteria given in Chapter 173-201A WAC; therefore, the Department will use the designated classification criteria for this water body in the proposed permit. The discharges authorized by this proposed permit should not cause a loss of beneficial uses.

CRITICAL CONDITIONS

Surface water quality-based limits are derived for the waterbody's critical condition, which represents the receiving water and waste discharge condition with the highest potential for adverse impact on the aquatic biota, human health, and existing or characteristic water body uses.

MIXING ZONES

The Water Quality Standards allow the Department of Ecology to authorize mixing zones around a point of discharge in establishing surface water quality-based effluent limits. Both "acute" and "chronic" mixing zones may be authorized for pollutants that can have a toxic effect on the aquatic environment near the point of discharge. The concentration of pollutants at the boundary of these mixing zones may not exceed the numerical criteria for that type of zone. Mixing zones can only be authorized for discharges that are receiving all known, available, and reasonable methods of prevention, control and treatment (AKART) and in accordance with other mixing zone requirements of WAC 173-201A-100. The National Toxics Rule (EPA, 1992) allows the chronic mixing zone to be used to meet human health criteria.

DESCRIPTION OF THE RECEIVING WATER

The Puyallup River is designated as a Class *B* receiving water in the vicinity of outfall 002. This designation is contained in WAC 173-201A-130. The location of outfall 002 is within the mouth of the river and river mile 1. Characteristic uses of Class *B* receiving water include the following: water supply (industrial, agricultural); stock watering; fish migration; fish and shellfish rearing, spawning and harvesting; wildlife habitat; secondary contact recreation; sport fishing; boating and aesthetic enjoyment; commerce and navigation. Water quality of this class shall meet or exceed the requirements for most uses.

Lincoln Avenue Ditch (outfall 001) is designated as *Class A* receiving waterbody as per WAC 173-201A-120-(6). Lincoln Avenue Ditch drains into the Blair Waterway. Characteristic uses of Class *A* receiving water include the following: water supply (domestic, industrial, agricultural); stock watering; fish migration; fish and shellfish rearing, spawning and harvesting; wildlife habitat; primary contact recreation; sport fishing; boating and aesthetic enjoyment; commerce and navigation. Water quality of this class shall meet or exceed the requirements for all or substantially all uses. It is however, unlikely that the Lincoln Avenue Ditch would be used as a source of domestic water supply in the near future.

SURFACE WATER QUALITY CRITERIA

Applicable criteria are defined in Chapter 173-201A WAC for aquatic biota. Due to the intermittent nature of the storm water discharge only the acute standards for water quality contained in WAC 173-201A are considered. In addition, U.S. EPA has promulgated human health criteria for toxic pollutants (EPA 1992). Criteria for this discharge are summarized below. It should be noted that the criteria for copper and chromium have been changed since the issuance of the previous permit. These changes are contained in WAC 173-201A and shown in Table 6.

Table 6. Relevant water quality criteria for receiving waterbody (*human health standards are based on ingestion of fish only, see discussion above on description of receiving water*).

Arsenic*	360 μg/L ; 0.14 ug/L (human health criteria for inorganic fraction)
Copper*	17 μg/L (based on a receiving water hardness of 100 mg/L); [$0.960*e^{(0.9422[LN(hardness)] - 1.464)}$]
Chromium*	15 μg/L (based on hexavalent form applied as total chromium)
pH	6.5 to 8.5 standard units with a human caused variation of 0.5 units within this range
Pentachlorophenol	9 μg/L : [$e^{[1.005(pH)-4.83]}$; at pH= 7]; 8.2 μg/L (human health criteria)
2, 4, 6-Trichlorophenol	6.5 μg/L (human health criteria)
Anthracene	110,000 μg/L (human health criteria)
Fluoranthene	370 μg/L (human health criteria)
Fluorene	14,000 μg/L (human health criteria)
Benzo(a)anthracene	0.031 μg/L (human health criteria)
Benzo(b)fluoranthene	0.031 μg/L (human health criteria)
Benzo(k)fluoranthene	0.031 μg/L (human health criteria)
Benzo(a)pyrene	0.031 μg/L (human health criteria)
Chrysene	0.031 μg/L (human health criteria)
Dibenzo(a,h)anthracene	0.031 μg/L (human health criteria)
Pyrene	11,000 μg/L (human health criteria)
2,3,7,8--TCDD (Dioxin)	14×10^{-9} μg/L (human health criteria)
Turbidity	< 5 NTU and <10 NTU above background for Class A and Class B waterbody, respectively
Toxics	No toxics in toxic amounts

* Metals criteria are based on total recoverable metals, except for the human health criteria for arsenic, which is based on the inorganic arsenic. The hardness of the receiving water (Puyallup River at river mile 1) is on an average approximately 100 mg/L as obtained during the Puyallup River TMDL study conducted by Ecology.

CONSIDERATION OF SURFACE WATER QUALITY-BASED LIMITS FOR NUMERIC CRITERIA

Metals and PCP

Concentrations of metals (copper, chromium, and arsenic) and PCP (see Table 3) are in excess of the water quality standards (Table 6). CPLC established dilution factors following the completion and approval of an AKART study and a mixing zone analysis. These dilution factors were accepted by Ecology as those existing in the receiving water (for outfall 002) by virtue of an 8-port diffuser in the Puyallup River, or in the City storm sewer (for outfall 001), by virtue of mixing with other flows existing

in the sewer prior to discharging to the Lincoln Avenue Ditch.

Outfall 001: The discharge at outfall 001 is to the City storm sewer which eventually discharges to the Lincoln Avenue Ditch via the City Outfall. The percentage of CPLC's flow to the total drainage-area flow at the City Outfall represents the degree of dilution that CPLC's discharge receives before draining to the Lincoln Avenue Ditch. A dilution factor of 9 has been established based on a ratio of total drainage area for the City Outfall at Lincoln Avenue Ditch and contribution from CPLC's 001 drainage area to this outfall (SEACOR, 1998).

In order to confirm the dilution factor of 9 for outfall 001, CPLC would be required to estimate the flow at the City outfall as well as the flow at outfall 001 during the monitoring period and at a designated monitoring frequency indicated in the permit.

Appendix C shows the reasonable potential calculation for exceedance of water quality standards at the City Outfall in Lincoln Avenue Ditch for discharge at outfall 001. The calculation is based on an assumed zero background concentration and a dilution factor of 9. In other words, it is assumed that the only contributor of these pollutants to the City storm sewer is CPLC. A reasonable potential to exceed water quality standards exists for chromium, copper, and pentachlorophenol based on an evaluation of data since January 1996. Thus, the Permittee may have to provide additional "best management practice" and if necessary treatment to meet the chromium, copper, and pentachlorophenol water quality standard at the City Outfall.

Appendix C also shows the effluent limitation for chromium, copper and pentachlorophenol (at outfall 001) based on water quality considerations and the existing dilution factor (9 to1) to be 138 μg/L, 159μg/L, and 81 μg/L, respectively. This would ensure that the concentration of chromium at the City Outfall in Lincoln Avenue Ditch would meet the water quality standard of 15 μg/L, 17 μg/L and 9 μg/L respectively for chromium, copper, and pentachlorophenol.

The 99th percentile for chromium, copper and pentachlorophenol concentration in the effluent at outfall 001 (see Table 3) is in excess of the water quality based limitations established in Appendix C and as indicated above. Thus, the water quality based limitations are more restrictive (see Table 7 below).

The 99th percentile of effluent arsenic concentrations is 365 μg/L. The facility was required to meet the water quality based effluent limitation of 360 μg/L in the previous permit. This limitation was also based upon an average industry performance. Since 1995 only one potential excursion of this limitation was observed. However, since the detection level (400 μg/L) was above the limit (360 μg/L) it was not a true excursion. Thus, the effluent limitation for arsenic would be limited to 360 μg/L (see Table 7).

Table 7. Effluent limitations for metals and PCP for outfall 001

Parameter	WQ based limit	99th percentile conc.	effluent limitation for outfall 001	Basis
Arsenic, μg/L	N/A*	365	360	WQ/performance
Copper, μg/L	159	307	159	WQ
Chromium , μg/L	138	655	138	WQ
Pentachlorophenol, μg/L	81	233	81	WQ

* No reasonable potential to exceed water quality standards based on available dilution.

The effluent limitations at outfall 001 (Table 7) are based on the assumption that with the available dilution, the water quality standards (see Table 6) will be met at the City outfall to the Lincoln Avenue Ditch. Thus, the city outfall must also be monitored for these pollutants as well as flow. This monitoring would be in addition to monitoring for these parameters at outfall 001.

Since the effluent limitations for copper, chromium and pentachlorophenol are more stringent than the 99th percentile of the effluent concentration at outfall 001 (see Table 3), a compliance schedule of one year would be granted for the final effluent limitations. In the interim, the 99th percentile values (see Table 3) would be used as interim limitations.

Outfall 002: A diffuser is being planned for outfall 002 in a tidally influenced section (approximately river mile 1) of the Puyallup River. This would be an 8-port diffuser with Tideflex valves. The ports are 3-inch in nominal diameter (1.5 inch in effective diameter) with a port angle of 30 degrees. The ports are spaced at 15 feet intervals. This diffuser provides a dilution of 85 to 1 at the edge of the acute mixing zone (20 feet from the diffuser).

Appendix C shows the reasonable potential calculation for exceedence of water quality standards at the edge of the acute mixing zone for outfall 002 in the Puyallup River. A reasonable potential to exceed water quality standards exists for chromium.

Appendix C also shows the effluent limitation for chromium (at outfall 002) based on water quality considerations and the existing dilution factor (85 to1) to be 1155 μg/L. This would ensure that the concentration of chromium at the edge of the mixing zone would meet the water quality standard of 15 μg/L. However, the interim limitation set in the previous permit is 1030 μg/L. This limitation was based upon an average industry performance and not reflective of specific facility uniqueness, e.g. production, extent of paving, etc. The water quality based limitation of 1155 μg/L would be used as the effluent limitation for chromium.

The 99th percentile of effluent arsenic concentrations is 650 μg/L. The facility was required to meet the water quality based effluent limitation of 360 μg/L in the previous permit. This limitation was based upon an average industry performance and not reflective of specific facility uniqueness, e.g. production, extent of paving, etc. Thus, a performance based limitation of 650 μg/L would be used as the effluent limitation. This limitation would also be protective of the water quality standard (360 μg/L) at the edge of the acute mixing zone.

The effluent limitation for copper would be what is currently being achieved using the best management practices since this is more restrictive than the water quality based effluent limitation and the available mixing zone. This is established as the 99th percentile values shown previously in Table 3 and reiterated here (see Table 8 below).

Table 8. Effluent limitations for metals and PCP for outfall 002

Parameter	WQ based limit	99th percentile conc.	effluent limitation for outfall 002	Basis
Arsenic, μg/L	N/A*	650	650	99th percentile
Copper, μg/L	N/A*	389	390	99th percentile
Chromium , μg/L	1155	1560	1155	WQ
Pentachlorophenol, μg/L	N/A*	63	63	99th percentile

* No reasonable potential to exceed water quality standards based on available dilution.

It should be noted that currently a diffuser has not been physically constructed in the Puyallup River. However, a mixing zone analysis and the resulting dilution factor have been approved by Ecology. Pending the completion of the diffuser, Ecology would impose "performance based" effluent limitation in the interim. The effluent limitations proposed in Table 8 above for arsenic, copper, and pentachlorophenol are in fact based on "performance" as it is more stringent than Water quality based limitation. The proposed limitation would be imposed during the interim period prior to construction of the diffuser and

continued following the completion of the construction of the diffuser. However, the diffuser must be constructed. Without the diffuser, the proposed effluent limitations (Table 8) for arsenic, copper, and pentachlorophenol would not be protective of water quality. The permit allows 12 months from the effective date of the permit to construct the diffuser.

The effluent limitation (1155 µg/L) for chromium is more stringent than the 99th percentile (1160 µg/L) of the effluent concentration at outfall 002. However, the difference is less than 0.5%. Thus, no compliance schedule would be allowed for the effluent limit of 1155 µg/L.

pH

A pH limitation of 6 to 9 would be retained since this is a demonstrated categorical technology based limitation imposed on all NPDES permits. However, the water quality standard of 6.5 to 8.5 (with a 0.5 units allowed for human activities within this range) would still have to be met at the City outfall on Lincoln Avenue Ditch (for outfall 001) and the edge of the mixing zone in Puyallup River (for outfall 002). It should be noted that CPLC's effluent has been between 6 to 8 and 6 to 7, respectively for outfalls 001 and 002, through the history of the permit. There is a predicted 1 to 85 dilution factor for the CPLC's storm water discharge to the Puyallup River and a 1 to 9 dilution factor for the discharge to the Lincoln Avenue Ditch. The Puyallup River or the Lincoln Avenue Ditch reach in the vicinity of the respective outfalls are not on the water quality impaired list (303(d) list) for pH.

Resultant water quality based effluent limitations

The resultant effluent limits are as follows. All metal limitations are for total metals. Consideration of human health standards is addressed later on.

Table 9: Resultant effluent limitations

Pollutant	Daily maximum	
	outfall 001	outfall 002
Arsenic, µg/L	360	650
Copper, µg/L	159	390
Chromium, µg/L	138	1155
PCP, µg/L	81	63

Water quality criteria for metals in Chapter 173-201A WAC are based on the dissolved fraction of the metal. The Permittee may provide data clearly demonstrating the seasonal partitioning of the dissolved metal in the ambient water in relation to an effluent discharge. Metals criteria may be adjusted on a site-specific basis when data is available clearly demonstrating the seasonal partitioning in the ambient water in relation to an effluent discharge. Metals criteria may also be adjusted using the water effects ratio approach established by USEPA, as generally guided by the procedures in USEPA Water Quality Standards Handbook, December 1983, as supplemented or replaced.

WHOLE EFFLUENT TOXICITY

The Water Quality Standards for Surface Waters require that the effluent not cause toxic effects in the receiving waters. Many toxic pollutants cannot be detected by commonly available detection methods. However, toxicity can be measured directly by exposing living organisms to the storm water in laboratory tests and measuring the response of the organisms. Toxicity tests measure the aggregate toxicity of the whole effluent, and therefore this approach is called whole effluent toxicity (WET) testing. Some WET tests measure acute toxicity and other WET tests measure chronic toxicity. Acute toxicity tests measure

mortality as the significant response to the toxicity of the effluent. Dischargers who monitor their storm water with acute toxicity tests are providing an indication of the potential lethal effect of the effluent to organisms in the receiving environment. Chronic toxicity tests measure various sublethal toxic responses such as retarded growth or reduced reproduction. Chronic toxicity tests often involve either a complete life cycle test of an organism with an extremely short life cycle or a partial life cycle test on a critical stage of one of a test organism's life cycles. Organism survival is also measured in some chronic toxicity tests.

The permit allows for a delay in effluent characterization for WET until compliance with all water quality based limitations have been achieved and storm water treatment facility efficiency has been improved. WAC 173-205-030(4) allows the Department to delay effluent characterization for WET for existing facilities that are under a compliance schedule in a permit to implement technology-based controls or to achieve compliance with surface water quality-based effluent limits. Thus, the testing for WET will be required in the year following the end of the compliance schedule to meet water quality based effluent limitations.

Because CPLC discharges substances with the potential to be toxic to aquatic life if discharged in excessive concentrations, the Department felt that it was necessary to establish in the last permit some reasonable controls on toxic pollutants discharged from the CPLC facility and applied the chemical-specific water quality criteria for aquatic life protection to the metals known to be used and discharged by the facility. CPLC accepted these requirements and implemented them. Only the acute water quality criteria were considered in establishing the effluent limitations. This consideration was based on the fact that storm water discharge was intermittent and that the chronic toxicity standards for water quality are based on a 4-day average.

The premise used for not considering chemical-specific chronic water quality criteria to discharges such as CPLC's also affect the implementation of chronic WET to this facility. Because of the lack of information currently on how to interpret the results of chronic WET testing of the CPLC discharges, the results of this testing cannot be used regulatorily in this permit. Until information is available on how to apply chronic WET to the CPLC discharges, no further chronic WET testing will be required. Only the acute water quality criteria were considered in establishing the effluent limitations. This consideration was based on the fact that storm water discharge was intermittent and that the chronic toxicity standards for water quality are based on a 4-day average.

In accordance with WAC 173-205-040, the Permittee's effluent has been determined to have the potential to contain toxic chemicals. The proposed permit contains requirements for whole effluent toxicity testing as authorized by RCW 90.48.520 and 40 CFR 122.44 and in accordance with procedures in Chapter 173-205 WAC. The proposed permit requires the Permittee to conduct toxicity testing for one year in order to characterize the acute toxicity of the effluent.

Accredited WET testing laboratories have the proper WET testing protocols, data requirements, and reporting format. Accredited laboratories are knowledgeable about WET testing and capable of calculating an NOEC, LC_{50}, EC_{50}, IC_{25}, etc. All accredited labs have been provided the most recent version of the Department of Ecology Publication # WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria* which is referenced in the permit. Any Permittee interested in receiving a copy of this publication may call the Ecology Publications Distribution Center 360-407-7472 for a copy. Ecology recommends that Permittees send a copy of the acute or chronic toxicity sections(s) of their permits to their laboratory of choice.

<u>Outfall 001</u>:

The discharge of industrial storm water at outfall 001 is combined in the storm sewer with runoff from a much larger drainage area. The proportion of CPLC's discharge to that from the total drainage area is 1 to

9. The NPDES general permit for municipal storm water is the regulatory mechanism, which will provide pollution controls for runoff from this drainage area of which CPLC is only a part. CPLC has an individual NPDES permit because it is an industry with a point source discharge to a storm sewer that discharges to surface water.

The point of compliance chosen for the water quality criteria (with due consideration to the approved available dilution) was the CPLC outfall (001) to the storm sewer which in turn discharges to the Lincoln Avenue Ditch. The point of compliance for acute WET in this permit will also be outfall 001 with due consideration to the approved available dilution. The lack of implementation information at this time prevents the application of the usual acute WET requirements to this discharge which include an acute WET limit set at the acute critical effluent concentration (ACEC). WAC 173-205-020 defines the ACEC in relation to a mixing zone established in accordance with WAC 173-201A-100. There is currently no information on how to establish a mixing zone under these circumstances meaning that no ACEC and no acute WET limit can be assigned. For the acute WET characterization, the critical percent sample, equivalent to CPLC's contribution to the flow in the storm sewer, must serve merely to trigger a requirement to submit a toxicity identification/ reduction evaluation (TI/RE) plan and implement it upon Department approval. The critical percent sample is established as approximately 11% based on a dilution factor of 1 to 9.

Submission of a toxicity identification/reduction evaluation (TI/RE) plan will be required for repeat significant toxicity at the critical percent sample defined above. Because the established regulatory approach for WET does not fit this situation for the reasons mentioned above, the TI/RE plan for this discharge may consider factors not applicable to other TI/RE plans:

- If the TI/RE can establish that the only substances contributing to acute WET are the metals or other pollutants already limited by the permit, then the chemical specific limits will be used in accordance with 40 CFR 122.44(d)(v) and WAC 173-205-040(1)(b) to limit the discharge of toxicity from the facility. The TI/RE in this case must also determine if these chemical-specific limits need to be reduced in order to protect aquatic life. The dilution provided by the storm sewer may be used in making this determination. If the TI/RE can establish the adequacy of the chemical-specific limits (either as they exist or appropriately reduced), then all acute WET testing requirements will cease.

If the TI/RE determines that chemical-specific limits are not adequate for protecting aquatic life either because the worst-case concentrations of the metals are too high or because a previously unknown toxicant is discovered, then CPLC will be required to develop and implement a plan for further source controls. In accordance with WAC 173-205-030(4), the acute WET characterization will be stopped and resumed at the time of completion of the implementation of the plan for toxicity source control.

<u>Outfall 002</u>:

The Permittee has conducted a mixing zone analysis and has established a dilution factor of 85 at the edge of an acute mixing zone for a proposed outfall diffuser yet to be constructed. This equates to 1.2 % effluent. This is the ACEC. In conducting the acute WET testing for outfall 002, a dilution series must include the ACEC.

If acute toxicity is measured during effluent characterization at levels that, in accordance with WAC 173-205-050(2)(a), have a reasonable potential to cause receiving water toxicity, then the proposed permit will set a limit on the acute toxicity. The proposed permit will then require the Permittee to conduct WET testing in order to monitor for compliance with an acute toxicity limit. The proposed permit also specifies the procedures the Permittee must use to come back into compliance if the limits are exceeded.

HUMAN HEALTH

Washington's water quality standards now include 91 numeric health-based criteria that must be considered in NPDES permits. These criteria were promulgated for the state by the U.S. EPA in its National Toxics Rule (Federal Register, Volume 57, No. 246, Tuesday, December 22, 1992).

The Department has determined that the effluent has (is likely to have) chemicals of concern for human health. The discharger's high priority status is based on knowledge of data or process information indicating regulated chemicals occur in the discharge, and that chemical is known or expected to be in the effluent. Table 10 shows the applicable human health criteria for the receiving water at CPLC (for ingestion of fish only).

Table 10: Applicable human health criteria

Arsenic	0.14 ug/L *
Pentachlorophenol	8.2 µg/L
2, 4, 6-Trichlorophenol	6.5 µg/L
Anthracene	110,000 µg/L
Fluoranthene	370 µg/L
Fluorene	14,000 µg/L
Benzo(a)anthracene	0.031 µg/L
Benzo(b)fluoranthene	0.031 µg/L
Benzo(k)fluoranthene	0.031 µg/L
Benzo(a)pyrene	0.031 µg/L
Chrysene	0.031 µg/L
Dibenzo(a,h)anthracene	0.031 µg/L
Pyrene	11,000 µg/L
2,3,7,8--TCDD (Dioxin)	14×10^{-9} µg/L

*This criteria is based on inorganic fraction of arsenic only and is currently being revised by EPA

The Department currently does not have any policy on how to implement the NTR standards for storm water. Thus, no effluent limitations would be imposed based on consideration of the National Toxics Rule for human health criteria at this time. However, monitoring for the constituents in Table 10 is required should a future policy be established. Monitoring for arsenic, pentachlorophenol and the PAHs is already required for assessing compliance with the water quality or technology based permit effluent limitations. Monitoring for 2, 4, 6-Trichlorophenol and Dioxins & Furans will be required, once in the final year of the permit term.

SEDIMENT QUALITY

The Department has promulgated aquatic sediment standards (Chapter 173-204 WAC) to protect aquatic biota and human health. These standards state that the Department may require Permittees to evaluate the potential for the discharge to cause a violation of applicable standards (WAC 173-204-400).

The Department has been unable to determine at this time the potential for this discharge to cause a violation of sediment quality standards. If the Department determines in the future that there is a potential for violation of the Sediment Quality Standards, an order will be issued to require the Permittee to demonstrate that either the point of discharge is not an area of deposition or, if the point of discharge is a depositional area, that there is not an accumulation of toxics in the sediments.

GROUND WATER QUALITY LIMITATIONS

The Department has promulgated Ground Water Quality Standards (Chapter 173-200 WAC) to protect beneficial uses of ground water. Permits issued by the Department shall be conditioned in such a manner so as not to allow violations of those standards (WAC 173-200-100). This Permittee has no discharge to ground and therefore no limitations are required based on potential effects to ground water.

COMPARISON OF EFFLUENT LIMITS WITH THE EXISTING PERMIT ISSUED June 30, 1993

Table 11 compares the effluent limitations proposed for the reissued permit and the effluent limitations in the previous permit. In the previous permit, only interim limitations were required to be met for pentachlorophenol, copper and chromium. No interim limitations were allowed for arsenic, oil & grease and pH. T he limitations for TSS and PAH in the proposed permit are included as per the requirement of the previous permit.

Table 11. Comparison of effluent limits in the proposed permit and the previous permit

Pollutant	Proposed Permit (daily maximum)		Previous permit (daily maximum)	
	outfall 001	outfall 002	Outfall 001	Outfall 002
Arsenic, µg/L	360	650	360	360
Copper, µg/L	159 (*310)	390	540	540
Chromium, µg/L	138 (*660)	1155	1030	1030
PCP, µg/L	81 (*230)	63	215	215
TSS, mg/L	50	50	----	----
PAH, µg/L	100	100	----	----
Oil and Grease, mg/L	10	10	10	10
pH	6 to 9	6 to 9	6 to 9	6 to 9

* interim limitations

For Outfall 001, a compliance schedule for six months is granted to comply with the final effluent limitations (see Table 11 above) for copper chromium and PCP.

MONITORING REQUIREMENTS

Monitoring, recording, and reporting are required (WAC 173-220-210 and 40 CFR 122.41) to verify that the treatment process is functioning correctly and the effluent limitations are being achieved.

The monitoring schedule is detailed in the proposed permit under Condition S.2. Specified monitoring frequencies take into account the quantity and variability of the discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring.

LAB ACCREDITATION

With the exception of certain parameters the permit requires all monitoring data to be prepared by a laboratory registered or accredited under the provisions of Chapter 173-50 WAC, *Accreditation of Environmental Laboratories.*

OTHER PERMIT CONDITIONS

REPORTING AND RECORDKEEPING

The conditions of S3. are based on the authority to specify any appropriate reporting and record keeping requirements to prevent and control waste discharges (WAC 273-220-210).

SPILL PLAN

The Department has determined that the Permittee stores a quantity of chemicals that have the potential to cause water pollution if accidentally released. The Department has the authority to require the Permittee to develop best management plans to prevent this accidental release under section 402(a)(1) of the Federal Water Pollution Control Act (FWPCA) and RCW 90.48.080.

The Permittee has developed a plan for preventing the accidental release of pollutants to state waters and for minimizing damages if such a spill occurs. The proposed permit requires the Permittee to update this plan and submit it to the Department.

SOLID WASTE PLAN

The Department has determined that the Permittee has a potential to cause pollution of the waters of the state from leachate of solid waste.

This proposed permit requires, under the authority of RCW 90.48.080, that the Permittee update the solid waste plan designed to prevent solid waste from causing pollution of the waters of the state. The plan must be submitted to the local permitting agency for approval, if necessary, and to the Department.

OUTFALL EVALUATION

Proposed permit condition S.10 requires the Permittee to conduct inspection of the proposed outfall on an annual basis, and submit a report detailing the findings of that inspection. The purpose of the inspection is to determine the condition of the discharge pipe and diffusers and to evaluate the extent of sediment accumulations in the vicinity of the outfall.

TREATMENT SYSTEM OPERATING PLAN

In accordance with state and federal regulations, the Permittee is required to take all reasonable steps to properly operate and maintain the treatment system (40 CFR 122.41(e)) and WAC 173-220-150 (1)(g). An operation and maintenance manual will be submitted as required by state regulation for the construction of wastewater treatment facilities (WAC 173-240-150). Implementation of the procedures in the Treatment System Operating Plan should provide a reasonable measure to ensure compliance with the terms and limitations in the permit.

GENERAL CONDITIONS

General Conditions are based directly on state and federal law and regulations and have been standardized for all individual industrial NPDES permits issued by the Department.

Condition G1 requires responsible officials or their designated representatives to sign submittals to the Department. Condition G2 requires the Permittee to allow the Department to access the treatment system, production facility, and records related to the permit. Condition G3 specifies conditions for modifying, suspending or terminating the permit. Condition G4 requires the Permittee to apply to the Department prior to increasing or varying the discharge from the levels stated in the permit application. Condition G5

requires the Permittee to construct, modify, and operate the permitted facility in accordance with approved engineering documents. Condition G6 prohibits the Permittee from using the permit as a basis for violating any laws, statutes or regulations. Conditions G7 and G8 relate to permit renewal and transfer. Condition G9 requires the Permittee to control its production in order to maintain compliance with its permit. Condition G10 prohibits the reintroduction of removed substances back into the effluent. Condition G11 states that the Department will modify or revoke and reissue the permit to conform to more stringent toxic effluent standards or prohibitions. Condition G12 incorporates by reference all other requirements of 40 CFR 122.41 and 122.42. Condition G13 notifies the Permittee that additional monitoring requirements may be established by the Department. Condition G14 requires the payment of permit fees. Condition G15 describes the penalties for violating permit conditions.

PERMIT ISSUANCE PROCEDURES

PERMIT MODIFICATIONS

The Department may modify this permit to impose numerical limitations, if necessary, to meet Water Quality Standards for Surface Waters, Sediment Quality Standards, or Water Quality Standards for Ground Waters, based on new information obtained from sources such as inspections, effluent monitoring, outfall studies, and effluent mixing studies.

The Department may also modify this permit as a result of new or amended state or federal regulations.

RECOMMENDATION FOR PERMIT ISSUANCE

This proposed permit meets all statutory requirements for authorizing a wastewater discharge, including those limitations and conditions believed necessary to control toxics, protect human health, aquatic life, and the beneficial uses of waters of the state of Washington. The Department proposes that this proposed permit be issued for a period not to exceed June 30, 2004. The Department normally proposes to issue permits for the regulatory maximum duration of five years. However, the Department is currently attempting to get all the permits in Basin 1 (South Puget Sound) to have the same issuance and expiration dates. Six months prior to the expiration date the Permittee is required to submit a letter indicating that no material and process changes have occurred at the permitted facility. Based on this letter the permit will be reissued by June 30, 2004 for a normal duration of five years. However, the Permittee must submit a complete permit application, at the time of renewal (six months prior to expiration), if significant process or material changes have occurred during the proposed permit duration.

REFERENCES FOR TEXT AND APPENDICES

1992. National Toxics Rule. Federal Register, V. 57, No. 246, Tuesday, December 22, 1992.

1991. Technical Support Document for Water Quality-based Toxics Control. EPA/505/2-90-001.

1985. Water Quality Assessment: A Screening Procedure for Toxic and Conventional Pollutants in Surface and Ground Water. EPA/600/6-85/002a.

1983. Water Quality Standards Handbook. USEPA Office of Water, Washington, D.C.

1998. Cascade Pole and Lumber Company Final Storm Water Mixing Zone Study Report.

1994. Permit Writer's Manual. WSDOE Publication Number 92-109

APPENDIX A--PUBLIC INVOLVEMENT INFORMATION

The Department has tentatively determined to reissue a permit to the applicant listed on page 1 of this fact sheet. The permit contains conditions and effluent limitations which are described in the rest of this fact sheet.

Public notice of application was published on August 30, and September 6, 1998, in the *Tacoma News Tribune* to inform the public that an application had been submitted and to invite comment on the reissuance of this permit.

The Department will publish a Public Notice of Draft (PNOD) in *Tacoma News Tribune* to inform the public that a draft permit and fact sheet are available for review. Interested persons are invited to submit written comments regarding the draft permit. The draft permit, fact sheet, and related documents are available for inspection and copying between the hours of 8:00 a.m. and 5:00 p.m. weekdays, by appointment, at the regional office listed below. Written comments should be mailed to:

Water Quality Permit Coordinator
Department of Ecology
Southwest Regional Office
P.O. Box 47775
Olympia, Washington 98504-7775

Any interested party may comment on the draft permit or request a public hearing on this draft permit within the thirty (30) day comment period to the address above. The request for a hearing shall indicate the interest of the party and reasons why the hearing is warranted. The Department will hold a hearing if it determines there is a significant public interest in the draft permit (WAC 173-220-090). Public notice regarding any hearing will be circulated at least thirty (30) days in advance of the hearing. People expressing an interest in this permit will be mailed an individual notice of hearing (WAC 173-220-100).

Comments should reference specific text followed by proposed modification or concern when possible. Comments may address technical issues, accuracy and completeness of information, the scope of the facility's proposed coverage, adequacy of environmental protection, permit conditions, or any other concern that would result from issuance of this permit.

The Department will consider all comments received within thirty (30) days from the date of public notice of draft indicated above, in formulating a final determination to issue, revise, or deny the permit. The Department's response to all significant comments is available upon request and will be mailed directly to people expressing an interest in this permit.

Further information may be obtained from the Department by telephone, (360) 407-6280, or by writing to the address listed above.

This permit and fact sheet were written by Anise Ahmed, P.E. and Greg Zentner, P.E.

APPENDIX B--GLOSSARY

Acute Toxicity--The lethal effect of a compound on an organism that occurs in a short period of time, usually 48 to 96 hours.

AKART-- An acronym for "all known, available, and reasonable methods of prevention, control and treatment".

Ambient Water Quality--The existing environmental condition of the water in a receiving water body.

Ammonia--Ammonia is produced by the breakdown of nitrogenous materials in wastewater. Ammonia is toxic to aquatic organisms, exerts an oxygen demand, and contributes to eutrophication. It also increases the amount of chlorine needed to disinfect wastewater.

Average Monthly Discharge Limitation --The average of the measured values obtained over a calendar month's time.

Best Management Practices (BMPs)--Schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the State. BMPs include treatment systems, operating procedures, and practices to control: plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. BMPs may be further categorized as operational, source control, erosion and sediment control, and treatment BMPs.

BOD_5--Determining the Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of organic material present in an effluent that is utilized by bacteria. The BOD_5 is used in modeling to measure the reduction of dissolved oxygen in a receiving water after effluent is discharged. Stress caused by reduced dissolved oxygen levels makes organisms less competitive and less able to sustain their species in the aquatic environment. Although BOD is not a specific compound, it is defined as a conventional pollutant under the federal Clean Water Act.

Bypass--The intentional diversion of waste streams from any portion of a treatment facility.

Chlorine--Chlorine is used to disinfect wastewaters of pathogens harmful to human health. It is also extremely toxic to aquatic life.

Chronic Toxicity--The effect of a compound on an organism over a relatively long time, often 1/10 of an organism's lifespan or more. Chronic toxicity can measure survival, reproduction or growth rates, or other parameters to measure the toxic effects of a compound or combination of compounds.

Clean Water Act (CWA)--The Federal Water Pollution Control Act enacted by Public Law 92-500, as amended by Public Laws 95-217, 95-576, 96-483, 97-117; USC 1251 et seq.

Compliance Inspection - Without Sampling--A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations.

Compliance Inspection - With Sampling--A site visit to accomplish the purpose of a Compliance Inspection - Without Sampling and as a minimum, sampling and analysis for all parameters with limits in the permit to ascertain compliance with those limits; and, for municipal facilities, sampling of influent to ascertain compliance with the 85 percent removal requirement. Additional sampling may be conducted.

Composite Sample--A mixture of grab samples collected at the same sampling point at different times, formed either by continuous sampling or by mixing discrete samples. May be "time-composite"(collected at constant time intervals) or "flow-proportional" (collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increased while maintaining a constant time interval between the aliquots.

Construction Activity--Clearing, grading, excavation and any other activity which disturbs the surface of the land. Such activities may include road building, construction of residential houses, office buildings, or industrial buildings, and demolition activity.

Critical Condition--The time during which the combination of receiving water and waste discharge conditions have the highest potential for causing toxicity in the receiving water environment. This situation usually occurs when the flow within a water body is low, thus, its ability to dilute effluent is reduced.

Dilution Factor--A measure of the amount of mixing of effluent and receiving water that occurs at the boundary of the mixing zone. Expressed as the inverse of the percent effluent fraction e.g., a dilution factor of 10 means the effluent comprises 10% by volume and the receiving water 90%.

Engineering Report--A document which thoroughly examines the engineering and administrative aspects of a particular domestic or industrial wastewater facility. The report shall contain the appropriate information required in WAC 173-240-060 or 173-240-130.

Fecal Coliform Bacteria--Fecal coliform bacteria are used as indicators of pathogenic bacteria in the effluent that are harmful to humans. Pathogenic bacteria in wastewater discharges are controlled by disinfecting the wastewater. The presence of high numbers of fecal coliform bacteria in a water body can indicate the recent release of untreated wastewater and/or the presence of animal feces.

Grab Sample--A single sample or measurement taken at a specific time or over as short period of time as is feasible.

Industrial Wastewater--Water or liquid-carried waste from industrial or commercial processes, as distinct from domestic wastewater. These wastes may result from any process or activity of industry, manufacture, trade or business, from the development of any natural resource, or from animal operations such as feed lots, poultry houses, or dairies. The term includes contaminated storm water and, also, leachate from solid waste facilities.

Major Facility--A facility discharging to surface water with an EPA rating score of > 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Maximum Daily Discharge Limitation--The highest allowable daily discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. The daily discharge is calculated as the average measurement of the pollutant over the day.

Method Detection Level (MDL)--The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is above zero and is determined from analysis of a sample in a given matrix containing the analyte.

Minor Facility--A facility discharging to surface water with an EPA rating score of < 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Mixing Zone--An area that surrounds an effluent discharge within which water quality criteria may be exceeded. The area of the authorized mixing zone is specified in a facility's permit and follows procedures outlined in state regulations (Chapter 173-201A WAC).

National Pollutant Discharge Elimination System (NPDES)--The NPDES (Section 402 of the Clean Water Act) is the Federal wastewater permitting system for discharges to navigable waters of the United States. Many states, including the State of Washington, have been delegated the authority to issue these permits. NPDES permits issued by Washington State permit writers are joint NPDES/State permits issued under both State and Federal laws.

pH--The pH of a liquid measures its acidity or alkalinity. A pH of 7 is defined as neutral, and large variations above or below this value are considered harmful to most aquatic life.

Quantitation Level (QL)-- A calculated value five times the MDL (method detection level).

Responsible Corporate Officer-- A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or have gross annual sales or expenditures exceeding $25 million (in second quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures (40 CFR 122.22).

Technology-based Effluent Limit--A permit limit that is based on the ability of a treatment method to reduce the pollutant.

Total Suspended Solids (TSS)--Total suspended solids is the particulate material in an effluent. Large quantities of TSS discharged to a receiving water may result in solids accumulation. Apart from any toxic effects attributable to substances leached out by water, suspended solids may kill fish, shellfish, and other aquatic organisms by causing abrasive injuries and by clogging the gills and respiratory passages of various aquatic fauna. Indirectly, suspended solids can screen out light and can promote and maintain the development of noxious conditions through oxygen depletion.

State Waters--Lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, and all other surface waters and watercourses within the jurisdiction of the state of Washington.

Stormwater--That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes, and other features of a storm water drainage system into a defined surface water body, or a constructed infiltration facility.

Upset--An exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the Permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, lack of preventative maintenance, or careless or improper operation.

Water Quality-based Effluent Limit--A limit on the concentration of an effluent parameter that is intended to prevent the concentration of that parameter from exceeding its water quality criterion after it is discharged into a receiving water.

APPENDIX C--TECHNICAL CALCULATIONS

Several of the Excel® spreadsheet tools used to evaluate a discharger's ability to meet Washington State water quality standards can be found on the Department's homepage at http.www:wa.gov.ecology.

Reasonable potential calculations for outfall 002 (Puyallup River) (Based on the procedure of EPA (1991)

Parameter	Arsenic	Copper	Chromium	Pentachlorophenol
Acute Metal Criteria Translator as decimal	1	0.96	0.98	1
Ambient Concentration (metals as dissolved), ug/L	3.7	2.3	1.7	0
Acute WQ Standard, ug/L	360	17	15	9
Max. conc. At edge of Acute Mixing Zone, ug/L	13	8	26	1
LIMIT REQ'D?	**NO**	**NO**	**YES**	**NO**
Effluent percentile value	0.95	0.95	0.95	0.95
Pn	0.92	0.92	0.92	0.92
Max effluent conc. measured (metals as total recoverable), ug/L	660	410	1700	75
Coeff Variation, CV	0.6	0.7	1	1
s	0.55	0.63	0.83	0.83
# of samples, n	36	36	36	36
Multiplier	1.14	1.16	1.22	1.22
Acute Dil'n Factor	85	85	85	85

Water quality based effluent limitations for Outfall 002

Parameter	Chromium
Acute Dil'n Factor	85
Chronic Dil'n Factor	1000
Acute Metal Criteria Translator	0.98
Ambient Concentration, ug/L	1.7
Water Quality Standard Acute, ug/L	15
Maximum Daily Limit (MDL), ug/L	**1155**
WLA Acute, ug/L	1132
LTA Acute, ug/L	231
LTA Coeff. Var. (CV)	1
LTA Prob'y Basis	0.99
Limiting LTA, ug/L	231
Coeff. Var. (CV)	1
MDL Prob'y Basis	0.99
# of Samples per Month, n	1

Reasonable potential calculations for outfall 001 (Lincoln Avenue Ditch) (Dilution factor used is within the City storm sewer)

Parameter	Arsenic	Copper	Chromium	Pentachlorophenol
Acute Metal Criteria Translator as decimal	1	0.96	0.98	0
Ambient Concentration (metals as dissolved), ug/L	0	0	0	0
Acute WQ Standard, ug/L	360	17	15	9
Max conc. at edge of Acute Mixing Zone, ug/L	52.58	44.11	112.65	34.81
LIMIT REQ'D?	**NO**	**YES**	**YES**	**YES**
Effluent percentile value	0.95	0.95	0.95	0.95
Pn	0.92	0.92	0.92	0.92
Max effluent conc. measured (metals as total recoverable), ug/L	400	330	770	250
Coeff Variation	0.8	1.2	1.9	1.2
s	0.70	0.94	1.24	0.94
# of samples, n	36	36	36	36
Multiplier	1.18	1.25	1.34	1.25
Acute Dil'n Factor	9	9	9	9

Water quality based effluent limitations for Outfall 001

PARAMETER	Chromium	Copper	Pentachlorophenol
Acute Dil'n Factor	9	9	9
Acute Metal Criteria Translator	0.98	0.96	
Ambient Concentration, ug/L	0	0	0
Water Quality Standard Acute, ug/L	15	17	9
Maximum Daily Limit (MDL), ug/L	**138**	**159**	**81**
WLA Acute, ug/L	135	153	81
LTA Acute, ug/L	16.35	26.57	14.06
LTA Coeff. Var. (CV)	1.9	1.2	1.2
LTA Prob'y Basis	0.99	0.99	0.99
Limiting LTA, ug/L	16.35	26.57	14.06
Coeff. Var. (CV)	1.9	1.2	1.2
AML Prob'y Basis	0.95	0.95	0.95
MDL Prob'y Basis	0.99	0.99	0.99
# of Samples per Month, n	1	1	1

APPENDIX D--RESPONSE TO COMMENTS

Public comments were accepted on the draft permit for a 60-day period. At the close of the public comment period (October 25, 2000) Ecology received comments from the following interested parties:

1. P. May Vichitkulwongsa, Cascade Pole and Lumber Company, August 28, 2000
2. Laurie Valeriano, Washington Toxics Coalition, October 25, 2000
3. Karen Dinicola, Citizens for a Healthy Bay, August 31, 2000
4. Karen Dinicola, Citizens for a Healthy Bay, October 24, 2000
5. Kathy Krech, Washington State Department of Natural Resources, September 6, 2000
6. Derek Wentorf, Puget SoundKeeper Alliance, October 25, 2000
7. Charles C. Caldart, National Environmental Law Center, on behalf of Washington Public Interest Research Group, October 25, 2000
8. Sara Blakeslee, Michael Kvoher, Merlaine Cook, Diane Regala, and Pia Dam of Tacoma, Susan and David Buhr of Renton, October 24, 2000

After a review of comments, the permit have been revised as appropriate. All responses to these comments should be considered as an addendum to the factsheet (statement of basis) for this permit.

Response to comments from Cascade Pole and Lumber Company (CPLC)

1. **Comment**: The storm water discharge system at Outfall 002 was designed to bypass only under severe storm events that cause an exceedence of the design capacity of the diffuser and onsite collection and storage system. During such event, the discharge pumps will continue pumping stormwater through the diffuser. Given that CPLC already collects stormwater sample at Outfall 002 during qualified storm events and that the bypass overflow is the same water as the water being pumped through the diffuser, CPLC requests that the sampling of the bypass be waived.

   Response: Although the quality of the bypass maybe the same as the quality of discharge at outfall 002, the monthly sampling event may not occur during a bypass. All bypasses must be reported and sampled. If there were no bypasses for a given month, it should be reported in the monthly "discharge monitoring report" as "no-bypass for this month". If outfall 002 is sampled at the time of a bypass, the bypass need not be sampled separately, and the same data as collected for outfall 002 can be used to report the quality of the bypass.

   Action taken: None.

Response to comments from Washington Toxics Coalition (WTC)

1. **Comment**: **Cascade Pole uses highly toxic pentachlorophenol (penta) to treat wood, which is then placed in the environment without further regulation:** Even though it has been banned in 26 countries, penta, a persistent bioaccumulative toxic (PBT) chemical is still used in Washington at 4 wood treating facilities, which are also toxic sites. Penta is also heavily contaminated with dioxin, one of the most toxic substances known to science and a PBT. EPA estimates that the use of penta in the U.S. resulted in 25,000 grams (TEQ) of dioxin per year, which is an extremely large quantity of dioxin.

   Penta is a restricted-use pesticide currently registered for use in the United States as a wood

preservative. Its primary use is for outdoor applications, such as for utility poles, fences, porches, piers, and bridges. Currently, the primary wood-preservative use of penta is on utility poles.

The use of penta to treat wood leads to widespread contamination of Washington's water and soil. Some of the penta winds up contaminating the soil on-site, some of it along with dioxin, is discharged into the local waterways and some of it goes off site with the treated wood. Much of the penta eventually leaves the wood either through leaching or volatilization (escape into the air). When it is used to treat utility poles, penta and its contaminants move downward to the bottom of the pole and tend to contaminate nearby soil. The EPA believes that most dioxin escapes from treated wood into the environment through volatilization (U.S. EPA 1999). If penta winds up in the air, soil and eventually the water when the poles are placed in the environment, shouldn't each pole or post be required to receive a NPDES permit for discharge into waters of the state?

Penta that is discharged into the environment winds up in our food and in our bodies and can have devastating effects. There is also serious concern for workers at penta facilities.

Almost all exposure to penta, for those who are not occupationally exposed, is through the food chain. Between 1985 and 1991, penta was found in milk, fruit, and meat. Individuals that may have greater exposures include people living in log homes made from penta-treated logs, and occupationally exposed workers. In addition, children and adults can be exposed through ingestion or contact with contaminated soil typically found where penta-treated wood is in contact with the soil.

Children generally have greater blood levels of penta than adults do, averaging nearly twice as much, and are widely exposed. A 1989 study found penta in the urine of 100%of the 197 children tested. While levels vary, nearly every person on earth carries penta in his or her body. Penta has been found in breast milk, seminal fluid, cerebrospinal fluid, and at high concentrations in testes, kidney, liver, and prostate tissue from individuals not occupationally exposed.

Exposures to the highest levels of penta are from occupational exposure. Workers applying penta are exposed at wood treatment plants, joinery mills, and in reapplication of penta to utility poles already in use.

Facts about penta's impacts include:

- Penta is extremely toxic to fish, with concentrations lethal to half the fish (LC50 values)ranging from 66 micrograms per liter in steelhead (Dominguez 1984)to 18 micrograms per liter for rainbow trout fry (Van Leeuwen 1985).
- Dramatic demonstrations of the effects of penta on wildlife have occurred here in the Northwest. A blue heron colony failed to reproduce when none of its 200 eggs hatched. The dioxins present in the herons ' eggs that failed to hatch matched those present in commercially produced penta (Greenpeace 1988).
- A 1991 spill from the Brooks wood treatment facility in Bellingham traveled to Whatcom Creek, killing 50,000 steelhead salmon at a hatchery (Greenpeace 1988).
- Penta has high acute toxicity because of its interference with basic metabolic processes. EPA classifies it in its highest acute-toxicity category, so that labels of almost all penta products bear the word DANGER.
- Penta poisoning may cause spasms, convulsions, coma, as well as dizziness, headache, personality changes, and anxiety (Jorens 1993).There have been approximately 50 known cases of acute penta poisoning, resulting in 30 deaths (NCAMP 1999).

- Penta has been classified as a probable (B2)carcinogen by the EPA, based on a study by the National Toxicology Program that found increased tumor incidence.
- Penta is associated with severe reproductive problems in herons and other wildlife.
- People occupationally exposed to penta have been found to have increased incidence of nasal cancer, skin cancer, and leukemia (Jorens 1993).
- In the draft science chapter for penta 's re-registration, EPA included an assessment of cancer risk for various exposures (U.S.EPA 1999).The estimated risks for some workers are truly shocking. For example, EPA estimates that workers applying penta grease to utility poles already in service have a cancer risk of 0.4 per worker, if the workers use all protective equipment, and of 3.4 per worker without protection. This means EPA expects at least 4 in 10 workers with lifetime exposure to get cancer, and if the workers don 't use protective equipment, every worker can be expected to get cancer. In fact, the EPA 's risk assessment finds that cancer risks for nearly all worker exposures are what EPA terms unacceptable, that is greater than 1 in 100,000. The risk assessment also found an unacceptable risk for children exposed to penta-contaminated soil, with a risk of up to 22 per 100,000.The cancer risk for exposure of children to penta-treated wood was also considered unacceptably high.
- Non-cancer effects include immune system and developmental effects. Both purified penta and commercial penta have been shown to cause skeletal abnormalities and fetal deaths (Schwetz 1974).

Response: Ecology appreciates the detailed information on toxicity of pentachlorophenol (PCP) provided by WTC. The draft permit contains effluent limit on PCP that is based upon state water quality standards (WAC 173-201A) for the protection of aquatic life. The point of compliance with the water quality standard is at the edge of a mixing zone that has been granted to CPLC in accordance with regulations in WAC 173-201A.

The current proposed PBT list of chemicals no longer includes pentachlorophenol. However, dioxin continues to be part of the PBT list. Dioxin is a contaminant found in PCP solutions.

The facility monitored for dioxins and furans in the previous permit cycle. Concentrations of dioxins and furans were found to be 43.7 ppq TEQ (Nov. 1998) and 97.8 ppq TEQ (March 1999), respectively. Neither 2,3,7,8 TCDD nor 2,3,7,8 TCDF were detected in the two samples.

The Department is concerned about potential impacts to human health from 14 pollutants identified in the factsheet. However, it is not clear how the National Toxics Rule that contains the human health standards would be applied to storm water that results in an intermittent flow during part of the year.

The Department continues to require monitoring for dioxins and furans and other pollutants of concern to human health. Data gathered maybe used in the future should a policy on implementation of human health criteria for storm water discharges be established. In the interim, the Department continues to require and encourage pollution prevention approach to reducing pollutant concentrations in storm water. This is contained in Condition S11 of the permit requiring a STORMWATER POLLUTION PREVENTION PLAN (SWPPP).

Action taken: None

2. Comment: **<u>Cascade Pole discharges to two waterbodies that must be protected for salmon migration and current restoration efforts.</u>**

Outfall 001 discharges to Lincoln Avenue Ditch, which empties into Blair Waterway. Outfall 002

discharges to the Puyallup River about .8 miles upstream from its mouth in Commencement Bay, in a reach that is affected by the tidal cycle of Puget Sound.

The Puyallup River bears all five species of Puget Sound salmon, with smolt out-migration beginning as early as February and lasting into October. White River Chinook, which are listed as threatened under the Endangered Species Act, have been documented to reside as long as 45 days in the Gog-le-hi-te wetland less than half a mile upstream.

As noted above penta is extremely toxic to fish. The LC50 values are: 66 micrograms per liter for steelhead; 18 micrograms per liter for rainbow trout fry and 68 micrograms per liter for chinook salmon. The proposed final penta limit for outfall 002, which discharges to the Puyallup River, is 63 micrograms per liter, dangerously close to the LC50 for chinook salmon and nearly 4 times the LC50 for trout fry. This could clearly result in a take of threatened salmon as well as other fish species, which is unacceptable.

According to Citizens for a Healthy Bay, the Blair waterway is the only waterway in Commencement Bay that never required cleanup. Let's keep it that way. If Ecology continues to permit extremely toxic chemicals such as arsenic, penta and others to be discharged, this waterway too will soon face a costly cleanup. It will be cheaper to require the facility to prevent pollution now than to require cleanup later. This has been proven over and over again.

Response: The proposed pentachlorophenol effluent limitation is protective of the aquatic toxicity based water quality standard of 9 µg/L at the edge of the acute regulatory mixing zone (20 feet downstream of an 8-port diffuser) for outfall 002 and at the city storm water outfall prior to discharging to Lincoln Avenue Ditch for outfall 001. WAC 173-201A allows mixing zones for compliance with water quality standards, provided that the facility meets all known, available and reasonable methods of treatment (AKART). The facility has submitted an AKART study which was reviewed and approved by Ecology in 1997.

For the construction of the diffuser CPLC conducted a biological assessment study that was presumably reviewed by Dept. of Natural resources, Dept. of Fish and Wildlife, and the Puyallup Tribe of Indians.

Action taken: None

3. **Comment**: **Ecology has committed to eliminating PBT chemicals in our environment and this permit is a perfect opportunity to begin implementation of its commitment.**

Because penta is one of the most dangerous PBT chemicals and is contaminated with another PBT chemical, dioxin, Ecology should make the phase-out of penta in this state a priority. Ecology should not attempt to control penta discharges, because that approach will never solve the problem of it building up in our environment, food chain and bodies threatening our wildlife and health. The only answer is elimination of the use of this chemical. The current NPDES permit process for Cascade Pole can be used effectively to begin the transition to penta elimination and we request that Ecology change the permit in the following way to accomplish this:

- Require a study to be completed by 2001 regarding how the facility plans to phase out the use of penta by 2003.
- Require the facility to make immediate changes in order to meet the water quality standards for penta. Eliminate the proposed new mixing zone for penta.

- Require dioxin monitoring (including all congeners known to contaminate penta) in this permit at least monthly, for both the discharges and the sediments. Require a comprehensive dioxin study for the sediments to help determine the extent of contamination.
- Include a requirement in the permit that the facility achieve zero discharge of penta to water by 2003. This date will provide enough time for the transition.
- Use this permit as a model for other facilities that use penta and set up a task force, which includes labor and environmental groups to monitor progress and to address any potential concerns regarding job loss.
- Finally, we want Ecology to immediately begin working with the Department of Agriculture to cancel the registration of penta products.

Response: Ecology is currently developing strategies for PBT chemicals. This is due to be presented to legislature in December 2000. Following approval and rule development, the strategy will be implemented. Although pending legislative approval, one of the strategies is to not grant any mixing zones for PBT chemicals. Ecology currently does not have a timeline on the development and implementation of the rule for PBT chemicals.

Once developed and approved, Ecology will implement the PBT rule. The current PBT list of chemicals no longer includes pentachlorophenol. However, dioxin, which is a contaminant in PCP, continues to be on the PBT list.

The use of PCP is regulated under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA). US Environmental Protection Agency regulates the use of PCP under FIFRA. The Department can not prohibit its use, only restrict the conditions of discharge from the facility.

Action taken: None

4. **Comment**: **The draft permit violates the "anti-backsliding" provisions of the Clean Water Act (CWA).** The draft permit represents several significant steps backward from the facility's prior permit (issued in 1993 and modified to extend the interim limits in 1996, hereinafter referred to as the "1993 permit"). The CWA "anti-backsliding" provisions were established to prevent standards from being weakened from one permit to the next. However, this permit takes steps backward, which violate this requirement.

(a) Limits for chromium (Cr), copper (Cu), and pentachlorophenol (Penta) at Outfall 001 are less stringent than the limits in the previous permit.

Section 402(o) of the Clean Water Act, 33 U.S.C. § 1342(o), prohibits the placement into a reissued permit of a limit for the discharge of a pollutant that is less stringent than a water quality based limit for that same pollutant in the previous permit. The limits for Cr, Cu, and PENTA in the draft permit are all nine times less stringent than the final limits specified in the 1993 permit. This is simply outrageous and illegal for several reasons.

1) The draft fact sheet states that 9 to 1 dilution is available in the City of Tacoma storm sewer culvert through which the discharge from 001 enters Lincoln Avenue Ditch. What has changed since 1993 that makes a 9 to 1 dilution now available in the sewer? The fact sheet provides no rationale as to why there should be a change from a water quality perspective.

2) The rationale provided in the fact sheet for the dilution does not even meet the exceptions provided in Section 402(o). Section 402(o)(3) provides that, "In no event may . . . a permit . . . be renewed,

reissued, or modified to contain a less stringent limitation if the implementation of such limitation would result in a violation of a water quality standard . . ." Clearly, this change will result in a water quality standard.

3) Cascade Pole has not installed all necessary treatment facilities (and, as noted in the draft fact sheet, the company has not properly operated the treatment system that it does have at 001). Ecology cannot just dramatically increase standards for these harmful chemicals when the facility has not even exhausted all possibilities to meet the water quality standards.

(b) Limits for Cr, Cu, Penta, and Arsenic (As) at Outfall 002 are also less stringent than the limits in the previous permit, which again violate the "anti-backsliding" provisions of the CWA.

The limits for Cr, Cu, and Penta in the draft permit are all considerably less stringent than the final limits specified in the 1993 permit (the Cr limit is 72 times less stringent), and the limit for As is almost twice as high as the previous As limit. (Moreover, the final limit for Cr in the draft permit is less stringent than the *interim* limit for Cr in the 1993 permit.) This violates section 402(o) of the Clean Water Act, cited above.

Again, the justification for the increase is not adequate. The fact sheet says that Cascade Pole will install an 8-port diffuser that is estimated to be able to provide 85 to 1 dilution at the edge of a large acute mixing zone.

First, the use of a mixing zone is inappropriate here (see discussion below).

Second, the draft permit applies these less stringent limits before the diffuser is installed and the discharger is given one year to install the diffuser. This use of a compliance schedule (and the concomitant *de facto* use of "pre diffuser" interim limits) violates 40 CFR 122.44(l)(1), which specifies that, "interim effluent limitations . . . must be at least as stringent as the final effluent limitations . . . in the previous permit."

(c) Establishing interim limits for Cr, Cu, and Penta at Outfall 001 are less stringent than the final limits in the previous permit and violate the "anti-backsliding" provisions of the Clean Water Act.

The draft permit specifies interim limits for Cr, Cu, Penta at 001 that are less stringent than the final limits for these pollutants in the 1993 permit. This violates 40 CFR § 122.44(l)(1), cited above.

Response: 40 CFR § 122.44(l)(i)(B)(1) provides for inclusion of a less stringent limitation in instances where "…information is available which was not available at the time of permit issuance ….. and which would have justified the application of a less stringent effluent limitation at the time of permit issuance.."

Condition S13.A of the previous permit allowed the permittee "…..to perform a receiving water mixing study to determine the amount of effluent and receiving water mixing which occurs. The results of the storm water mixing study will be used by the Department *to re-calculate the final water quality-based storm water effluent limitations.* Depending on the results of the study, the water quality-based storm water effluent limitations *may either increase, decrease, or remain the same*. In the event the Permittee elects not to perform the storm water mixing study, the final effluent limitations contained in S1. of this permit will take effect as scheduled.

Condition S13.C also contained the following requirement "…..pursuant to WAC 173-201A-100(2), the Permittee shall provide to the Department a report detailing the application of all known, available, and reasonable methods of prevention, control, and treatment (AKART) for arsenic, copper, chromium, and pentachlorophenol in the storm water discharge(s) authorized under this permit. This report shall be submitted along with the storm water mixing study…."

The facility has submitted both an AKART study as well as a mixing zone study. The proposed effluent limitations are based upon an evaluation of the AKART and mixing zone study as well as the monthly effluent concentrations measured at the respective outfalls over the course of last several years (following implementation of "best management practices").

The 99th percentile of effluent concentrations has been used to represent maximum effluent concentrations that the facility can reasonable achieve using existing BMPs or treatment. For outfall 001 the effluent limit for arsenic is the same as the previous permit. For copper and chromium, the final limitations in the previous permit were never achieved. However, the 99th percentile of the effluent concentration (310µg/L and 660µg/L for copper and chromium, respectively) is better than the previous interim limitation (540 µg/L and 1030 µg/L, for coper and chromium, respectively). These have been used as the new interim limitations. The final limitation for PCP was also not met in the previous permit. However, the 99th percentile of effluent concentration (230 µg/L) was similar to the interim limitation (215 µg/L) in the previous permit. This will be retained in the proposed permit.

For outfall 002, the 99th percentile of arsenic effluent concentration (650 µg/L) was in excess of the final effluent limitation of 360 µg/L. The 99th percentile is protective of the water quality standard at the edge of the mixing zone. The proposed effluent limitation for copper, chromium and PCP are based upon the 99th percentile of effluent concentration (390µg/L, 1155µg/L, and 63µg/L, for copper, chromium, and PCP, respectively). These are more stringent than the interim limitation in the previous permit (540µg/L, 1030µg/L, and 215µg/L, for copper, chromium and PCP, respectively) but are still higher than the final limitation in the previous permit.

Action taken: Interim limitation for PCP for outfall 001 would be kept same as the previous interim limitation of 215 µg/L.

5. Comment: **The draft permit fails to establish effluent limits necessary to meet water quality criteria.**

Section 301(b)(1)(C) of the Clean Water Act, 33 U.S.C. § 1311(b)(1)(C), requires that, in addition to meeting any applicable technology-based effluent limits promulgated by EPA, dischargers meet "any more stringent limitation . . . required to implement any applicable water quality standard established pursuant to this chapter."

The draft permit fails to set water quality based effluent limits for outfalls 001 and 002 sufficient to meet water quality criteria in the receiving waters, and thus violate section 301(b)(1)(C) of the Clean Water Act. In addition, where the draft fact sheet relies on Department of Ecology regulations as a basis for this failure, those regulations do not justify departure from water quality based effluent limits.

More specifically, the draft permit fails to meet water quality based criteria because:

a) It allows 9 to 1 dilution in setting water quality based effluent limits for Cr, Cu, and Penta at

Outfall 001.

We cannot find data that supports that a 9 to 1 dilution exists in the storm sewer culvert for outfall 001. We believe discharges from 001 at the final limits specified in the draft permit will cause violations of the water quality criteria for Cr, Cu, and Penta in the Lincoln Avenue Ditch.

In addition, Ecology cannot assume a background level of zero for these pollutants because of past practices at the facility and other sources in the area that might contribute to contamination. There are a number of other industrial and commercial facilities in the area that appear to be potential sources of Cr, Cu, and perhaps Penta. There are also ongoing hazardous waste cleanup activities along Lincoln Avenue Ditch, which may also be a source of these chemicals that reach the receiving waters. Clearly, these additional loads can contribute to violations of the water quality criteria for these chemicals in Lincoln Avenue Ditch.

(b) It allows interim limits for water quality based effluent limits for Cr, Cu, and Penta at Outfall 001.

The permit violates applicable law by granting Cascade Pole one year to meet these limits, and by setting interim limits during that period that are representative of the facility's near-worst current performance.

First, Section 301(b)(1)(C) does not allow compliance schedules for water quality based effluent limits. Instead, the provision requires that polluters meet "any more stringent limitation . . . required to implement any applicable water quality standard." Second, the reason for granting the compliance schedule, and the interim limits set, do not meet applicable Department of Ecology regulations. The compliance schedule and interim limits are explained in the fact sheet as follows:

Since the effluent limits for copper, chromium and pentachlorophenol are more stringent than the 99th percentile of the effluent concentration at outfall 001 (see Table 3), a compliance schedule of one year would be granted for the final effluent limitations. In the interim, the 99th percentile values (see Table 3) would be used as interim limitations.

The reasons for which a compliance schedule may be granted under Ecology regulations are set forth in WAC 173-201A-160(4)(a). The regulations do not say that a compliance schedule can be granted if the limits are set at a level below that which the discharger has met 99% of the time.

Further, Ecology regulations specify that "[s]chedules of compliance . . . shall generally not exceed the term of any permit." WAC 173-201A-160(4)(c). Cascade Pole has already been given the length of its previous permit (which was issued in 1993 and expired in 1998) to meet final water quality based limits for Cr, Cu, and Penta which were more stringent than the limits specified in the draft permit. We cannot see any legal or any rational reason to provide Cacade Pole with another year to meet the less stringent limits of the draft permit.

(c) It allows a mixing zone for discharges of Cr, Cu, Penta, and As from Outfall 002.

We do not believe that mixing zones are allowed under the CWA; Section 303 and Section 310(b)(1)(C). The objective of the CWA is to restore and maintain the integrity of the waters of the United States. Goals of the law include:

the elimination of all discharges of wastes into public waters;
a prohibition against discharging toxic pollutants in toxic amounts;

and having all possible U.S. waters be fishable and swimmable.

Mixing zones are in direct conflict with meeting these goals and should therefore be illegal. Particularly with respect to PBT chemicals mixing zones make no sense at all. PBTs by their very nature do not dilute. Even when discharged in small quantities they persist, build up in the food chain and increase in concentration as they move up the food chain-no dilution is happening. Because the following mixing zone requirements in WAC 173-201A-100 have not been met Ecology should not grant a mixing zone:

1) WAC 173-201A-100(4) states that "no mixing zone shall be allowed unless the supporting information clearly indicates the mixing zone would not have a reasonable potential to cause a loss of sensitive or important habitat, result in damage to the ecosystem, or adversely affect public health or the environment." There is no way that Ecology can claim that this mixing zone will not result in serious problems. Based on the information we provided earlier, penta has been shown to have serious impacts in human health and the environment. This is a sensitive area that must be protected, particularly for endangered salmon. A mixing zone for these harmful chemicals should not be granted.

2) WAC 173-201A-100(2) requires a discharger "to fully apply AKART prior to being authorized for a mixing zone." We have found no evidence that Cascade Pole is applying AKART and should therefore not be granted a mixing zone.

Furthermore, WAC 173-201A-100 does not make mixing zones mandatory. Ecology has the discretion of whether or not to grant one. In this case, there is too much at stake. Ecology should use its discretion and not grant a mixing zone.

(d) It allows one year to install a diffuser at Outfall 002.

Even if the acute mixing zone specified in the draft permit were appropriate here, water quality criteria for Cr, Cu, Penta, and As will be violated *even at the edge of the proposed mixing zone* until the diffuser is installed and operational.

(e) It does not establish effluent limits necessary to meet human health criteria.

As noted in the draft fact sheet, EPA set numeric water quality standards based on human health criteria for these receiving waters in 1992. See 40 CFR § 131.36. As set forth in the draft fact sheet, a comparison of pollutant discharge levels from Outfalls 001 and 002 (fact sheet, p. 11) with the applicable human health criteria (fact sheet, p. 20) demonstrates that the levels of several pollutants in the effluent exceed human health criteria by two to three orders of magnitude. Even at the 85 to 1 dilution claimed at the edge of the proposed mixing zone for Outfall 002, the human health criteria for some pollutants would still be exceeded.

This is of concern for two important reasons:

1) The human health criteria were established based on risk estimates for persons eating fish living in the receiving waters, and these receiving waters are classified for, among other uses, fish rearing, spawning, and harvesting. The Puyallup River, especially, is an important source of salmon.

2) This is an environmental justice issue since the discharges will potentially impact the Puyallup tribe. While the human health criteria were developed with risk estimates for persons eating fish, Ecology must also take into account the larger quantities of fish eaten by Northwest tribes. The

Columbia River Intertribal Fish Commission and Northwest Indian Fisheries Commission have documented that Native people in the Northwest consume far more fish than the so-called "average" person. For example, the Nez Perce Tribe estimated tribal fish consumption to be closer to **63 grams** a day, instead of the 6.5 grams an "average" person might consume. Ecology is even considering setting a default fish consumption rate of 175 grams per day per person, which should be done and used in the human health criteria and applied to this permit.

Despite this information, Ecology has included no effluents limits to ensure compliance with relevant water quality standards based on human health criteria. We do not believe the reason provided by Ecology is adequate, which is that there is no formal policy for setting such limits for stormwater discharges. Failure to set such limits, is a violation of section 301(b)(1)(C) of the Clean Water Act.

Response: The permit contains effluent limitations based upon meeting water quality standards (WAC 173-201A) at the edge of applicable mixing zones.

a) A 9 to 1 dilution for storm water discharge to Lincoln Avenue Ditch is based upon ratio of Cascade Pole's drainage area contributing to outfall 001 and the total drainage area contributing flow to the storm-sewer system to which outfall 001 discharges. This evaluation is contained in the report "Cascade Pole and Lumber Company Final Storm Water Mixing Zone Study" completed by SEACOR in 1998. There is no mixing zone allowed in the Lincoln Avenue Ditch. The water quality standards must be met at the city stormwater outfall prior to discharging to Lincoln Avenue Ditch. Both the outfall 001 and the city stormwater outfall are required to be monitored for Cu, Cr, As and PCP. This would further verify the established dilution factor of 1 to 9. If, data suggests that such dilution is not present due to impact from other sources, the dilution factor maybe changed in the future.

b) WAC 173-201A-160(4)(c) allows establishing schedules of compliance following implementation of non-construction changes e.g. pollution prevention etc. The facility has implemented BMPs during the term of the previous permit. Additional time is being allowed to implement additional BMPs and/or treatment to meet the effluent limitation. WAC 173-201A-160(4)(a)(iii) allows schedule of compliance to allow for "implementation of additional storm water BMPs for discharges determined not to meet water quality criteria following implementation of an initial set of BMPs". The 99th percentile concentration is indicative of Cascade Pole not meeting the water quality criteria following implementation of initial BMPs. For outfall 001, additional BMPs including treatment may need to be implemented to achieve the final water quality based effluent limitation.

c) Even though the CWA (section 303) does not specifically address mixing zones, it does require states to establish water quality standards. The State of Washington does have water quality standards (WAC 173-201A) that contain allowance for mixing zones and that have been approved by U.S. EPA.

1) WAC 173-201A-100(4) does state that "no mixing zone shall be allowed unless the supporting information clearly indicates the mixing zone would not have a reasonable potential to cause a loss of sensitive or important habitat, result in damage to the ecosystem, or adversely affect public health or the environment." As part of the proposed construction of the diffuser, Cascade Pole completed a biological assessment (BA) report titled "Storm water Diffuser Installation and Operation at Cascade Pole and Lumber Company: Biological Assessment" (Pentec Environmental, Inc. September 9, 1999) that evaluated potential effects of the installation and operation of a storm water diffuser in the Puyallup River on species listed under the ESA known to utilize habitats within a 1.5 mile radius of the proposed project. The report was prepared in anticipation of potential need for consultation with NMFS and/or USFWS by other federal agencies making decision on the diffuser construction project. The conclusion of the report was that the diffuser installation and operation at

Cascade Pole may affect, but is unlikely to adversely affect, juvenile chinook or coho salmon, bull trout, Pacific herring, peregrine falcon, or bald eagle. The BA report was submitted to Dept. of Natural Resources (DNR) during obtaining permission from DNR to construct the diffuser. In addition, the report was presumably reviewed by the Dept. of Natural Resources, by the Dept. of Fish and Wildlife, and by the Puyallup Tribe of Indians.

2) Cascade Pole has completed an AKART study on existing available technology for the treatment of storm water runoff. Ecology believes that implementation of BMPs (see factsheet) currently constitute AKART for storm water runoff at Wood Treaters. None of the wood treating industries in Washington are providing any treatment beyond BMPs for metals. Cascade Pole provides treatment for Pentachlorophenol and PAHs through its multi-media filtration system at outfall 002. The mixing zone was granted based upon Cascade Pole's implementation of BMPs. However, if future effluent data indicates that the water quality standards can not be met even with the provision of a mixing zone, additional BMPs and/or treatment would be required.

d) Interim limitations are incorporated during the compliance schedule for constructing the diffuser

The Department is concerned about potential impacts to human health from 14 pollutants identified in the factsheet. However, it is not clear how the National Toxics Rule that contains the human health standards would be applied to storm water that results in an intermittent flow during part of the year. The Department continues to require monitoring for dioxins and furans and other pollutants of concern to human health. Data gathered maybe used in the future should a policy on implementation of human health criteria for storm water discharges be established. In the interim, the Department continues to require and encourage pollution prevention approach to reducing pollutant concentrations in storm water. This is contained in Condition S11 of the permit requiring a STORMWATER POLLUTION PREVENTION PLAN (SWPPP).

Action taken: None

Response to comments from Citizens for a Healthy Bay, August 31, 2000

1. **Comment**: Copper (CU), chromium (Cr), arsenic (As), and PCP are bioaccumulative toxins that are harmful to aquatic life and for which permitted discharges must be minimized. PCP is a particularly persistent toxic compound. The intent of the Clean Water Act is that industries will continue to reduce their pollution. In this draft permit, the final limits for outfall 002 have been unacceptably raised from the limits set in the previous permit for As (from 360 ug/L to 650 ug/L), for Cr (from 16 ug/L to 1,155 ug/L), Cu (from 18 ug/L to 390 ug/L), and PCP (from 9 ug/L to 63 ug/L).

   The acute freshwater criterion for As is 360 ug/L and the chronic criterion is 190 ug/L. The respective criteria for CR(VI) are 15 ug/L and 10 ug/L (it is reasonable to assume that virtually all of the chromium present in surface water discharges is hexavalent). I have not calculated the criteria for Cu and PCP, but I doubt they are higher than these proposed discharge limits.

   Cascade Pole's discharges create an unacceptably large acute toxicity zone in the Puyallup River. The Puyallup River is an important salmon passage zone and this permit may be subject to provisions of the Endangered Species Act

   The allowable concentrations of toxins in outfall 001 have also been unacceptably raised in comparison with the previous permit. The limit for As is the same (360 ug/L) but the limit for Cr has

been raised from 16 ug/L to 138 ug/L with an interim limitation of 660 ug/L. The Cu limit is raised from 18 ug/L to 159 ug/L with an interim limitation of 310 ug/L. And the PCP limit is raised from 9 ug/L to 81 ug/L with an interim limitation of 230 ug/L. The interim limitations would be allowable for one year after the issue of the permit.

Lincoln Ditch is not available to Cascade Pole under any circumstances as an open toxic sewer where dilution takes place. The ditch is subject to an EPA-mandated cleanup of other industrial contamination, including PCP, and therefore cannot provide the dilution credit claimed by Cascade Pole. The Port of Tacoma's prime habitat mitigation site on Blair Waterway is just downstream from the outfall of Lincoln Avenue Ditch.

The final limits set in the previous permit were never met. I noted more than a dozen excursions for metals and 2 for PCP in the DMRs during the last few years of this permit cycle. Yet the only enforcement actions taken by Ecology were for oil and grease and pH Violations - not nearly the threat to environmental health posed by PCP and metals.

We support Ecology's adding PAH and TSS limits for this permit revision and renewal, but we cannot accept the increased concentration limits for As, Cr, Cu, and PCP. These concentrations must be equal to or lower than the limits established in the previous permit.

Mass limits are clearly required by the Clean Water Act. A total loading or flow limitation must be established for each outfall. We support Cascade Pole's efforts to recycle its stormwater for use in its wood treatment processes and request that the company investigate treatment options during this permit cycle and work to remove PCP and metals from future discharges to our public waterways.

Response: The water quality standards are still required to be met by Cascade Pole. Only the point of compliance has been moved from the outfall to the edge of an authorized mixing zone. Limited data gathered at wood treating facilities suggests that effluent chromium exists in both trivalent and hexavalent forms. The trivalent being the dominant species. The proposed permit allows CPLC to conduct a chromium assessment study of the chromium speciation in the storm water discharge.

No mixing zone is allowed in the Lincoln Avenue Ditch. The water quality standards must be met at the city outfall containing CPLCs flow prior to discharging to the Ditch.

CPLC has conducted a biological assessment study for the construction of the diffuser. Please see additional response to comments under **Response to comments from Washington Toxics Coalition.**

Mass limitation (whether daily maximum or monthly average) is difficult to establish given the intermittent nature of storm water and probable variability of concentration within a storm event. Regulations (40 CFR 122.47(f) allow an exception to mass limitations when determined to be impractical.

Over the course of the previous permit, Ecology has responded to violations of the permit through warning letters, notices of violation, notices of correction, orders and penalties. Currently Ecology is working on a notice of violation for the September 2000 discharge monitoring report.

Action taken: None.

Response to comments from Citizens for a Healthy Bay, October 24, 2000

1. **Comment**: Our primary concern with this draft permit is that it allows CPLC to release substantial discharges of persistent bioaccumulative toxic pollutants in violation of established water quality criteria: the draft permit does not provide adequate protection of wildlife in either of the water bodies to which CPLC discharges contaminated stormwater. CPLC has known since 1993 that its practices are endangering public resources, and although they have made some improvements in their yard, the reduction in discharges has not been substantial. In fact, the facility is discharging greater amounts of some toxic chemicals.

   This facility never complied with the final requirements of its last permit, issued in 1993. We are disappointed that Ecology's intent with this new draft permit is to allow CPLC to continue to discharge such toxic concentrations of chemicals.

   The risks associated with each of the toxic compounds regulated by this permit are substantial and should be well known to the permit manager. Ecology has committed to continually reduce persistent bioaccumulative toxins in our environment. One of the stated strategies is to lower emission limits for such compounds.

   PCP poses long-term threat to the environment. It sorbs strongly to soils and requires sunlight (unavailable in the sediment-laden Puyallup River or in the blackberry-choked Lincoln Avenue Ditch) to break down. Microorganisms also break PCP down into other compounds, but the breakdown products include other phenols that are also toxic.

   Response: The effluent limitations contained in the draft permit are protective of aquatic life as allowed for in WAC 173-201A. The current proposed list of persistent bioaccumulative toxic pollutants does not include any chemicals that are limited in the proposed permit including pentachlorophenol**.** Please see additional response to comments under **Response to comments from Washington Toxics Coalition**.

   Action taken*:* None.

2. **Comment**: This permit is less stringent than the previous permit in several ways that not only lack justification but are in conflict with the anti-backsliding requirements and other provisions of the Clean Water Act. We are especially concerned that Ecology is planning to raise the permitted concentration limits (as specifically referenced in our previous letter) and grant large mixing zones for these toxic chemicals instead of requiring CPLC to add or improve treatment to reduce their pollutant load.

   Response: Please see response to comments on anti-backsliding under **Response to comments from Washington Toxics Coalition.**

   Action taken*:* None.

3. **Comment**: There are other issues with CPLC's compliance with their previous permit: CPLC did not sample the rainstorm that occurred during the last week of September 2000. Instead, the facility submitted a discharge monitoring report stating that sufficient flow did not occur during the month - a clear violation of the self-monitoring requirements of their permit, as this particular storm generated enough runoff to cause localized flooding, and undoubtedly surpassed any minimum precipitation requirement. It was an important first-flush-type storm and CPLC should not have neglected to collect

a sample during it. Installation of an automatic sampling device should be required as part of the enforcement action for this lapse in self-monitoring.

Response: Ecology is currently taking enforcement action for the September 2000 discharge monitoring report.

Action taken*:* None.

4. **Comment:** This facility has not completed many of the studies required by its 1993 permit, including acute and chronic toxicity testing and control and treatability evaluations which were to determine how the final limits in the 1993 permit would be achieved. Dilution by 9 or 85 times is not an appropriate vehicle for attaining water quality standards, especially when treatment options have not been attempted or fully evaluated.

   Response: The acute and chronic whole effluent toxicity (WET) tests required in the previous permit were to be done following compliance with the final water quality based effluent limitations. WET tests are appropriate once water quality based effluent limitations are met. Because of the new information (data on effluent concentrations following implementation of BMPs, AKART and mixing study as allowed under Condition S13 of the previous permit) new effluent limitations were developed based on consideration of water quality standards, what the facility could achieve following implementation of the BMPs and what was reasonable treatment as evaluated in the AKART study.

   Action taken*:* None.

5. **Comment:** The fact sheet for this draft permit states that, based only on existing best management practices at the facility, water quality standards for chromium, copper, arsenic, and pentachlorophenol cannot be achieved. However, treatment is in place at outfall 001 and the infrastructure(collection and pumping facility) has been in place to add it for outfall 002 since before the permit modification in 1996.

   Response: The language should state that the water quality standards for chromium, copper, arsenic, and pentachlorophenol can not be currently met as determined through evaluation of effluent concentrations at outfall 001 and 002. The facility currently employs "best management practices" and treatment to control pollutant discharge from the site.

   Action taken*:* None.

6. Comment : <u>Outfall 001.</u> We disagree with the determination that 9:1 dilution is provided for this outfall before it discharges to Lincoln Avenue Ditch (Mixing Zone Study Report by SECOR, dated September 14, 1998). The stormwater from the portion of the facility drained by outfall 001 is at best getting a6:1 dilution with other stormwater from neighboring areas on the tideflats before the storm drain discharges to surface water. The 9:1dilution figure appears to rely on a portion of the drainage areas for the Gog-le-hi-te wetland, the ditch upstream from the outfall of the storm drain to which outfall 001 discharges, and the area north of Lincoln Avenue that flows northward. Thus the facility is not meeting water quality standards in the ditch. This doubt is confirmed by the sampling results provided in the receiving water testing study (also bySECOR, dated March 26, 1998) where it is clear that the outfall is not getting 9:1 dilution. In addition to the drainage basin discrepancy, we challenge CPLC's assumption that there are no other sources of chemicals, particularly metals, in the water by which they claim dilution is occurring.

The inspection report for this facility dated May 15, 2000 noted that CPLC is not changing the filters in the treatment system for this outfall often enough. We request that language be added to the permit specifying a maintenance schedule for the treatment facility with which CPLC is required to comply.

We concur with the first flush sampling requirement at both points in September of each year of the permit, and are extremely disappointed that CPLC neglected to sample that event this year. We request that CPLC be required to sample the city storm drain outfall into Lincoln Avenue ditch every month during the first year of the permit to ensure that water quality standards are not exceeded at this point. Because travel time is involved, Outfall 001 should be tested first and not simultaneously (footnotes 7 and 8 on p. 9 of the draft permit).

Ecology should not grant CPLC one year from the date of issuance to meet the discharge limits for Cr, Cu, PCP, PAHs, and TSS in this outfall. Interim permit limits set in the previous permit were simply extended for the life of the permit. The Clean Water Act specifically prohibits granting a compliance schedule beyond the life of a permit, but this is the mechanism being employed here. The amount of dilution available is not subject to change. Proper operation and maintenance of the filtration system should improve the removal of the contaminants. Immediate compliance with the final limits should be required.

Treatment does appear to be effective for PAHs in this outfall, and the concentrations reported in the DMRs have not exceeded the proposed limit of 100 ug/L during the past two years. Only one measurement exceeded 50ug/L.

Mass loading limits must be established for all pollutants regulated by this permit. Because no flow limit is in place, there is no restriction on the total amount of pollution CPLC may discharge to Lincoln Avenue Ditch and Blair Waterway.

Response: The mixing zone study included a portion of the Gog-le-hi-te wetland in estimating the 9:1 dilution factor for outfall 001. Ecology believes that data collected both at the city storm water outfall as well as at outfall 001 would give a better sense of actual dilution factor for outfall 001. Both these are required to be monitored in the permit. Following an initial evaluation of the data from these two locations, the dilution factors maybe re-established with new water quality based effluent limitations imposed through a permit modification. A monthly monitoring of city storm water outfall would provide additional data beyond the once every two month monitoring currently required for the first year of the permit term. Ecology recognizes the importance of travel time and agrees that outfall 001 should be sampled prior to sampling the city storm water outfall.

The frequency of changing of the filters at outfall 001 is required to be addressed in Condition S5 of the permit.

Ecology is aware of the September 2000 DMR issue and is in the process of taking appropriate action.

The issue of mass loading and compliance schedule is addressed in response to comments under **Response to comments from Citizens for Healthy Bay, August 31, 2000** and response to comments under **Response to comments from Citizens for Healthy Bay, October 31, 2000,** respectively.

Action taken: Monitoring frequency for the City storm water outfall changed to once every month for the first year. Also, the sampling sequence for outfall 001 and city outfall changed from "at the same time" to "sample outfall 001 first and then city outfall".

6. **Comment : <u>Outfall 002</u>.** Section S1.D of the draft permit, as currently written, grants CPLC a 20' dilution zone downstream from an 8-port diffuser. This planned diffuser is 190' long and roughly perpendicular to the bank of the river. However, the width of the river is only about 500' wide at hightide - and about 350' wide at low tide. This is clearly in violation of the maximum allowable portion of the water body that can be utilized to attain dilution.

   We request that Ecology eliminate the mixing zone for toxic discharges to this sensitive reach of the Puyallup River. Activated carbon and mixed media filtration treatment should be required for this outfall instead of construction of the diffuser. The diffuser would allow a190'x20' zone of acute toxicity up to 85 times the water quality standards for protection of aquatic life. The toxic discharges from the diffuser may constitute a taking of salmon in violation of the Endangered Species Act.

   For more than seven years, Ecology has allowed this facility to discharge toxic pollutants to the tidally affected reach of the Puyallup River in concentrations that violate water quality standards by up to two orders of magnitude. Although no study has been conducted and quantitative data are not available, there can be no doubt that the acute toxic discharges from this facility are affecting salmon. The Puyallup River bears all five species of Puget Sound salmon, with smolt out-migration beginning as early as February and lasting into October. White River Chinook, which are listed as threatened under the Endangered Species Act, have been documented to reside as long as 45 days in the Gog-le-hi-te wetland less than 0.4 mile upstream. Salmon probably spend much less time in the river itself, but the acute concentrations discharged during storms are likely killing salmon.

   If the 8-port diffuser is constructed, it should be completed no later than February 2001 (the beginning of salmon out-migration) not within"12 months of the effective date of the permit" as specified in S1.E.

   The LC50 (lethal concentration where half the population expires) is 66ug/L for steelhead, a fatty ocean-going fish that is comparable to salmon. The LC50 for trout, comparable to other less fatty fish, is even lower: 18 ug/L of PCP. The proposed allowable concentration of 63ug/L in Section S1.C of the draft permit is 3.5 times this known lethal limit. Because PCP is not the only chemical affecting fish in this reach, the synergistic effects of PCP, As, Cr, and Cu concentrations must be considered. It is not unreasonable to assume that the toxic concentrations measured during storm sampling last at least one hour, and that fish in the vicinity of the outfall during a storm event perish from the exposure.

   If the diffuser is constructed, Ecology should require testing for As, Cr, Cu, PCP, and the breakdown products of PCP in the sediments immediately downstream from the diffuser. This testing should occur annually, in the spring, after the winter's accumulation has been deposited in the river. Because Ecology is not authorized to grant a sediment impact zone, the measurements should never exceed sediment quality standards.

   Pentachlorophenol supplies are usually contaminated with dioxin, another bioaccumulative toxin. At these high concentrations of PCP, the facility should be monitoring for dioxin in its discharges. We request that dioxin be added to the list of parameters to be analyzed each month. If the diffuser is constructed, CPLC should also sample for dioxin in the sediments downstream from the diffuser.

   We reviewed the past several years' DMRs for this facility and observed that concentrations of PAHs in this outfall have increased substantially since this time last year (there was no similar increase at outfall001). Specifically, the concentrations were always less than 100 ug/Lwith a high of 67.8 ug/L

through October 1999 and always greater than100 ug/L, up to a high of 599.4 ug/L, beginning in November 1999. Why are these concentrations increasing, and why is Ecology permitting this increase? Why is Ecology not requiring immediate compliance with the100 ug/L limit instead of granting CPLC one year from the date of issuance of the permit?

Mass loading limits must be established for all pollutants regulated by this permit. Because no flow limit is in place, there is no restriction on the total amount of pollution CPLC may discharge to the Puyallup River.

The lower reach of the Puyallup River is included on the 303(d) list for arsenic. Allowing CPLC an increased loading of As will be detrimental to the TMDL process Ecology is required to implement for this reach. This permit should not allow discharges of As to the Puyallup River in violation of water quality standards.

Ecology has set only an acute mixing zone for this outfall. There are chronic exposure effects to wildlife beyond the acute boundary. Chronic limits must be established, and must not extend into the river more than 25% of its width.

The concentration limits set for this outfall are too high for As, Cr, Cu, PCP. And CPLC should not be granted one year from the date of the permit issuance to comply with the concentration limits for metals.

Because this is a tidally affected reach, both marine and fresh water quality criteria must be considered. The first flush may occur at any stage of the tidal cycle; therefore the most protective criteria among those for the two environments must be applied to the discharge limits for this outfall.

Response:

- WAC 173-201A-100 limits the size of the mixing zone to 25% of the width of the waterbody at mean lower low water (MLLW). The width was obtained from NOAA's Coast and Geodetic Survey (CGS) Map for Commencement Bay. This map reflects shorelines at MLLW. The river width noted in the SEACOR (1998) report is 600 feet based on CGS maps. The diffuser section of the pipe is actually 105 feet long instead of 190 feet as indicated in the comment.

- As part of the proposed construction of the diffuser, Cascade Pole completed a biological assessment (BA) report titled "Storm water Diffuser Installation and Operation at Cascade Pole and Lumber Company: Biological Assessment" (Pentec Environmental, Inc. September 9, 1999). For additional information, please see response to Comment 5(c) from WTC.

- CPLC began construction of the diffuser in the beginning of August 2000 after obtaining the following construction permits:
  Shoreline Permit - City of Tacoma
  Nationwide Permit 7 - Corps of Engineers
  Hydraulic Project Approval - Department of Fish & Wildlife
  JARPA Certification - Department of Ecology
  NPDES Permit - Department of Ecology (currently being renewed)

  The following activities have been completed so far: the diffuser pipe is installed, the rip rap has been placed, the trench is backfilled, the tide gate at bypass outfall has been replaced with a new tide gate, erosion control mat has been installed and native species planted on the river bank.

On October 27th 2000, Mr. David Molenaar of Department of Fish & Wildlife visited the site. During the visit, CPLC proposed habitat mitigation measure to be implemented per Conditions 22 and 23 of the Hydraulic Project Approval. CPLC has received a verbal approval from the WDFW for mitigation measure through 2,100 square feet of riparian revegetation with woody species. Per hydraulic Project Approval, implementation of the mitigation measure must be completed by November 17, 2001.

- The proposed pentachlorophenol effluent limitation is protective of the aquatic toxicity based water quality standard of 9 μg/L at the edge of the acute regulatory mixing zone (20 feet downstream of an 8-port diffuser) for outfall 002. WAC 173-201A allows mixing zones for compliance with water quality standards, provided that the facility meets all known, available and reasonable methods of treatment (AKART). The facility has submitted an AKART study which was reviewed and approved by Ecology in 1997. Ecology believes that the synergistic effects of the various pollutants are better evaluated following achievement of water quality based limitations and through whole effluent toxicity (WET) testing. This is required in the permit.

- Ecology believes that mass loading for stormwater are not appropriate. Please see response to Comment 1 under **Response to Comments from Citizens for Healthy Bay, August 31, 2000.**

- The reach of the Puyallup River that is listed as impaired for arsenic is near River Mile 8.3 and is located upstream of Cascade Pole. Outfall 002 is within River mile 1.

- The water quality chronic aquatic toxicity standard is based upon an exposure duration of 4 days to a continuous discharge. Storm water discharge is intermittent in nature and usually is less than 4 days in duration. Thus, chronic toxicity standards were not evaluated.

- Ecology believes that one year of compliance schedule is reasonable time for the facility to come in to compliance with the proposed effluent limitations.

- WAC 173-201A-060 requires that near the boundary of fresh and marine waters, freshwater criteria shall be applied at any point where 95% of the vertically averaged daily maximum salinity values are less than or equal to one part per thousand. Marine criteria shall apply at all other locations. Freshwater criteria were used based upon information available to Ecology at the time the permit was written. Ecology has requested information from Cascade Pole to establish the vertical salinity near the vicinity of the outfall. Once the vertical salinity is established, the appropriate criteria would be imposed on the discharge.

Action taken: Requirement for monitoring of salinity in the Puyallup River has been included in the permit for the first year of the permit cycle. The data gathered would be evaluated and, if necessary, the effluent limitations would be changed through a permit modification.

Response to comments from Washington State Dept. of Natural Resources

1. **Comment: S2. MONITORING REQUIREMENTS, A. 1.** *Endnote 1*. As the Puyallup River is a critical migration corridor for threatened and endangered salmonids, every effort must be made to ensure its health. Therefore, the first sentence of paragraph 2 in this section should be revised to read "...the discharge resulting from every storm event that is greater than 0.1 inch…". As written the sentence implies that a single sampling event would be adequate to ensure the safety of aquatic habitats.

Response: Ecology believes that sampling every storm event is not necessary to ensure that water quality standards are being met. The current sampling frequency of once a month from September through May is deemed sufficient.

Action taken: None

2. **Comment:** Cascade Pole's Biological Assessment states that the diversity of benthic communities should improve as a result of the planned diffuser. If true, this supposition could prove to be a critical piece of information for preserving salmonids, as well as improving outfall design and ecosystem health throughout the region. As a result, a monthly benthic and epibenthic sampling requirement should be added for each year of the permit during salmonid out migration season (4/1 to 7/3 1). It should further be required that the data be shared on a yearly basis with the Washington Departments of Fish and Wildlife and Natural Resources.

Response: Cascade Pole & Lumber (CPLC) met with Department of Fish & Wildlife (DFW), and the National Marine Fisheries Service (NMFS) earlier this year to discuss the findings of the Biological Assessment. It was concluded during the meeting that the installation of the diffuser would not adversely affect the benthic population. Therefore, a benthic and epibenthic sampling was not required as part of the Hydraulic Approval Project issued by the DFW.

Action Taken: None

3. Comment: S5. Operation and maintenance. The following system requirements should be added:
- All storm drains and catch basins for both outfalls should be cleaned out twice a year (9/31 and 3/31).
- Installation of a tide gate on the existing pipe in Outfall 002.
- The installation of a second pump as a back up in the new diffuser system for Outfall 002.

Response: Storm drains are being cleaned once a year prior to commencement of the rainy season. Ecology believes that the additional cleaning is not necessary. Outfall 002 already has a tidegate and a second pump.

Action taken: None

4. Comment: The Puyallup river drains a large watershed and not only has significant flows, but storm events that carry large pieces of debris capable of causing considerable damage to the new diffusers therefore, rather then inspecting the pipe annually for structural integrity and function, the inspection frequency should be mandated to occur after every ten (10) year rain event or twice a year, whichever is more frequent.

Response: The diffuser pipe is located at the bottom of the river with rip-rap covering the pipe. The risers with diffuser ports are 2 feet above the diffuser pipe and 1.5 feet above the rip-rap. The current permit requires the diffuser to be inspected between July through September, each year. Ecology believes that this is a reasonable frequency for diffuser inspection, and is already more stringent than inspection frequency required in other NPDES permits.

Action Taken: none.

Response to comments from Puget SoundKeeper Alliance

1. **Comment**: S1. Discharge Limitations. The goal of the clean water act is to stop the discharge of pollution into our national waterways. The Department of Ecology is violating this goal by increasing Cascade Pole's effluent limits on arsenic, chromium, copper and PCP significantly above the existing cascade pole permit.

   For outfall 001, the effluent limits have been raised for PCP (from 9 ug/L to 81 ug/L), chromium (from 16ug/L to 138 ug/L) and copper (from 18ug/L to 159 ug/L). These limits also have even higher interim limits (PCP 230 ug/L, Cr 660 ug/L and Cu 310 ug/L) that will be valid for a year following the issuance of this permit.

   For outfall 002, the effluent limits have been raised for PCP (from 9 ug/L to 63ug/L), arsenic (from 360ug/L to 650 ug/L), chromium (from 6ug/L to 1155ug/L) and copper (from 18 ug/L to 390 ug/L). The Puyallup River is a very important salmon tributary. The large acute toxicity area created in the river by the outfall could have a deleterious effect on endangered Chinook salmon and may be subject to "take" provisions under the Endangered Species Act. The Puyallup River is also listed by the Department of Ecology as an impaired waterway for arsenic (Township 20N, Range 04E, section 21) just north of Cascade Pole. Why is Ecology increasing the arsenic limit in a waterway already impaired by arsenic?

   Finally, the proposed effluent limits are violating acute levels for arsenic and chromium.

   We recommend that the Department of Ecology decrease the effluent limits from the existing Cascade Pole permit. The draft permit effluent limits as written are unacceptable.

   We recommend imposing a flow limit on the new permit, limiting the amount or daily load being discharged from the outfalls.

   We support Cascade Pole's proposal to recycle stormwater from their facility for use in their wood processing procedure. We ask that Cascade Pole look into other ways of treatment that would decrease their use of metals and PCP's in the procedure.

   Response: Please see response to comments under **Response to comments from Washington Toxics Coalition**. The reach of the Puyallup River that is listed as impaired for arsenic is near River mile 8.3 and is located upstream of Cascade Pole (Outfal 002 is within river mile 1).

   Action Taken: None

Response to comments from National Environmental Law Center on behalf of Washington Public Interest Research Group

1. **Comment:** VIOLATION OF THE CLEAN WATER ACT'S "ANTI-BACKSLIDING" PROVISIONS. As discussed below, the draft permit actually represents several significant steps backward from the facility's prior permit (issued in 1993 and modified to extend the interim limits in 1996, and hereinafter referred to as the "1993 permit"). These steps backward represent violations of the "anti-backsliding" provisions of the federal Clean Water Act.

(a) The Draft Permit Violates the Clean Water Act's "Anti-Backsliding" Provisions By Establishing Limits for Chromium (Cr), Copper (Cu), and Pentacholorphenol (PCP) at Outfall 001 That Are Less Stringent Than the Limits in the Previous Permit.

Section 402(o) of the Clean Water Act, 33 U.S.C. § 1342(o), prohibits (with exceptions not relevant here) the placement into a reissued permit of a limit for the discharge of a pollutant that is less stringent than a water quality based limit for that same pollutant in the previous permit. The limits for Cr, Cu, and PCP in the draft permit are all nine times less stringent than the final limits specified in the 1993 permit. The justification for this change articulated in the draft fact sheet is that 9 to 1 dilution is available in the City of Tacoma storm sewer culvert through which the discharge from 001 enters Lincoln Avenue Ditch, a Class A waterway of the State of Washington. This is unavailing for several reasons.

First, as discussed below, it is factually inaccurate; 9 to 1 dilution does not occur in the culvert. Second, the articulated rationale does not appear to meet any of the exceptions to the backsliding prohibition set forth in Section 402(o). The available dilution likely is the same now as it was in 1993, and there is no justification for a change from a water quality perspective. Nor can it be argued that CPLC has installed all necessary treatment facilities (and, as noted in the draft fact sheet, the company has not properly operated the treatment system that it does have at 001). Third, even if an exception to the backsliding prohibition were otherwise applicable, it could not be utilized here, because section 402(o)(3) provides that, "In no event may . . . a permit . . . be renewed, reissued, or modified to contain a less stringent limitation if the implementation of such limitation would result in a violation of a water quality standard . . ."

(b) The Draft Permit Violates the Clean Water Act's "Anti-Backsliding" Provisions By Establishing Interim Limits for Cr, Cu, and PCP at Outfall 001 That Are Less Stringent Than the Final Limits in the Previous Permit.

The draft permit specifies interim limits for Cr, Cu, and PCP at 001 that are less stringent than the final limits for these pollutants in the 1993 permit. This violates 40 CFR § 122.44(l)(1), which specifies that, "interim effluent limitations . . . must be at least as stringent as the final effluent limitations . . . in the previous permit." Even if the relaxation of the final limits to reflect the asserted 9 to 1 dilution were lawful, the use of interim limits that are less stringent than these relaxed final limits (*i.e.*, the use of interim limits that, in effect, allow credit for a greater than 9 to 1 dilution) would violate 40 CFR § 122.44(l)(1).

(c) The Draft Permit Violates the Clean Water Act's "Anti-Backsliding" Provisions By Granting a Compliance Schedule for Total Suspended Solids (TSS) and Polynuclear Aromatic Hydrocarbons (PAH) at Outfalls 001 and 002.

The draft permit gives the discharger one year to meet the technology-based standards for TSS (50 mg/l) and PAH (100 microgram/liter) at both outfalls. The 1993 permit, however, specifies that, "the Department will, upon permit renewal, impose" these very limits unless the discharger has submitted a technical study demonstrating that alternate limits are appropriate. As noted in the draft fact sheet, CPLC has submitted no such study. Thus, under the terms of the 1993 permit, the TSS and PAH limits are to be imposed "upon permit renewal." The granting of a compliance schedule is less stringent than this provision in the 1993 permit, and thus violates both section 402(o) of the Clean Water Act and 40 CFR § 122.44(l)(1), cited above.

Moreover, even apart from the anti-backsliding prohibitions, a compliance schedule simply is inappropriate here. CPLC has been on notice for more than seven years that it would have to meet

these specific limits. It is difficult to discern a principled justification for granting the company yet even more time to attain compliance.

(d) The Draft Permit Violates the Clean Water Act's "Anti-Backsliding" Provisions By Establishing Limits for Cr, Cu, PCP, and Arsenic (As) at Outfall 002 That Are Less Stringent Than the Limits in the Previous Permit.

The limits for Cr, Cu, and PCP in the draft permit are all considerably less stringent than the final limits specified in the 1993 permit (the Cr limit is 72 times less stringent), and the limit for As is almost twice as high as the previous As limit. (Moreover, the final limit for Cr in the draft permit is less stringent than the *interim* limit for Cr in the 1993 permit.) This violates section 402(o) of the Clean Water Act, cited above. The justification for this change articulated in the draft fact sheet is that CPLC will install an 8-port diffuser that is estimated to be able to provide 85 to 1 dilution at the edge of a large acute mixing zone. As discussed below, however, the use of a mixing zone is inappropriate here. Moreover, the draft permit makes these less stringent limits applicable even before the diffuser is installed (the discharger is given one year to install the diffuser), and would thus allow violations of water quality standards even beyond the edge of the proposed mixing zone. This use of a compliance schedule (and the concomitant *de facto* use of "pre diffuser" interim limits) violates 40 CFR 122.44(l)(1), which specifies that, "interim effluent limitations . . . must be at least as stringent as the final effluent limitations . . . in the previous permit." It also violates section 402(o)(3) of the Clean Water Act, which provides that, "In no event may . . . a permit . . . be renewed, reissued, or modified to contain a less stringent limitation if the implementation of such limitation would result in a violation of a water quality standard . . ."

Response: Please see response to Comment 4 under **Response to comments from Washington Toxics Coalition.**

Action taken: None

2. Comment: FAILURE TO ESTABLSIH EFFLUENT LIMITS NECESSARY TO MEET WATER QUALITY CRITERIA. Section 301(b)(1)(C) of the Clean Water Act, 33 U.S.C. § 1311(b)(1)(C), requires that, in addition to meeting any applicable technology-based effluent limits, dischargers meet "any more stringent limitation . . . required to implement any applicable water quality standard established pursuant to this chapter." As set forth more fully below, for both outfall 001 and outfall 002, the draft permit fails to set water quality based effluent limits sufficient to allow attainment of applicable water quality criteria in the receiving waters, and it thus violates section 301(b)(1)(C) of the Clean Water Act. In addition, in instances where the draft fact sheet purports to rely on Department of Ecology regulations as a basis for this failure, those regulations do not justify a departure from water quality based effluent limits.

(a) The Draft Permit Fails to Meet Water Quality Criteria Because It Allows 9 to 1 Dilution Credit in Setting Water Quality Based Effluent Limits for Cr, Cu, and PCP at Outfall 001.

A review of available drainage information for the area does support the conclusion that 9 to 1 dilution is available in the City of Tacoma storm sewer culvert before the outfall 001 effluent enters the Lincoln Avenue Ditch. At most, a dilution of approximately 6 to 1 would appear to be available. Accordingly, discharges from 001 at the final limits specified in the draft permit would cause violations of the water quality criteria for Cr, Cu, and PCP in the Lincoln Avenue Ditch.

Moreover, as noted in the draft fact sheet, the credit for dilution that is contemplated here is based on the assumption that the background level of these pollutants is zero, and that CPLC is the only source of these pollutants in the culvert. However, since there are a number of other industrial and commercial facilities in the area that would appear to be potential sources of Cr, Cu, and perhaps PCP, this assumption is not supported by the record. In addition, the fact that there are ongoing hazardous waste cleanup activities along Lincoln Avenue Ditch indicates that historic contamination may also be a source from which these chemicals reach the receiving waters. This is a further indication that discharges from 001 at the final limits specified in the draft permit would cause violations of the water quality criteria for these chemicals in Lincoln Avenue Ditch.

(b) The Draft Permit Fails to Meet Water Quality Criteria Because It Allows Interim Limits for Water Quality Based Effluent Limits for Cr, Cu, and PCP at Outfall 001.

Even if the 9 to 1 dilution credit were valid, the permit still violates applicable law by granting CPLC one year to meet these limits, and by setting interim limits during that period that are representative of the facility's near-worst current performance.

First, Section 301(b)(1)(C) does not allow compliance schedules for water quality based effluent limits. Rather, that provision specifies that, as of July 1, 1977, dischargers are required to meet "any more stringent limitation . . . required to implement any applicable water quality standard."

Second, the reason for granting the compliance schedule, and the interim limits set, are not in conformance with applicable Department of Ecology regulations. The draft fact sheet, at page 22, explains the compliance schedule and interim limits as follows:

Since the effluent limits for copper, chromium and pentachlorophenol are more stringent than the 99th percentile of the effluent concentration at outfall 001 (see Table 3), a compliance schedule of one year would be granted for the final effluent limitations. In the interim, the 99th percentile values (see Table 3) would be used as interim limitations.

The reasons for which a compliance schedule may be granted under Ecology regulations are set forth in WAC 173-201A-160(4)(a). The fact that the limits are set at a level below that which the discharger has met 99% of the time is not one of these reasons. Further, Ecology regulations specify that "[s]chedules of compliance . . . shall generally not exceed the term of any permit." WAC 173-201A-160(4)(c). CPLC has already been given the length of its previous permit (which was issued in 1993 and expired in 1998) to meet final water quality based limits for Cr, Cu, and PCP which were more stringent than the limits specified in the draft permit. The discharger should not now be given another year to meet the less stringent limits of the draft permit. Finally, even if a schedule of compliance were otherwise appropriate here, schedules of compliance must "ensure final compliance with all water quality-based effluent limits in the shortest practicable time." WAC 173-201A-160(4)(a). There is no showing here that CPLC would not be able to attain compliance with the final limits in less than a year's time. Moreover, by setting the interim limits at a level the discharger can easily meet through current performance, there is no incentive for the company to complete any necessary compliance activities *before* a year's time. Nor are the interim limits remotely designed to protect water quality.

(c) The Draft Permit Fails to Meet Water Quality Criteria Because It Allows a Mixing Zone for Discharges of Cr, Cu, PCP, and As From Outfall 002.

The draft permit's limits for Cr, Cu, PCP, and As would, even if the proposed diffuser were installed, result in violations of acute water quality criteria for these pollutants within the proposed mixing zone. There are several reasons why it would be inappropriate to grant the proposed mixing zone.

Although we recognize that both EPA and the Department of Ecology have policies allowing mixing zones under certain conditions, these policies are not consistent with section 303 or section 301(b)(1)(C) of the Clean Water Act, neither of which authorize the maintenance of areas within receiving waters in which water quality criteria necessary to meet designated uses are allowed to be violated indefinitely. This is especially true for water quality criteria for toxic substances; as stated in section 101(a)(3) of the Clean Water Act, 33 U.S.C. § 1251(a)(3), "it is the national policy that the discharge of toxic pollutants in toxic amounts be *eliminated*." (Emphasis added.)

Further, even assuming that mixing zones for toxic pollutants were consistent with the Clean Water Act, the proposed mixing zone for Outfall 002 does not satisfy the requirements of Department of Ecology regulation in at least two important respects.

First, WAC 173-201A-100(2) specifies that a discharger “shall be required to fully apply AKART prior to being authorized a mixing zone," and WAC 173-201A-100(8) specifies that acute criteria “shall be met as near to the point of discharge as practicably attainable.” In other words, a mixing zone is not appropriate unless the discharger has first applied AKART, as well as any other “practicable” means of reducing the toxicity of the discharge. It cannot be reasonably argued that CPLC has met this requirement here. Although the company has taken various BMP measures to reduce the pollutant concentrations in its discharge from outfall 002, it has applied absolutely no treatment to the discharge from this outfall.

Clearly, treatment for these pollutants, at the discharge volumes experienced here, is technologically feasible. Such treatment is performed in many industry segments throughout the country. Indeed, the discharger already has an activated carbon and mixed media treatment system in place at outfall 001, and the infrastructure to support a collection and treatment system at outfall 002 is already largely in place here. Moreover, this company is not impecunious, and there has been no showing that it could not afford to install adequate treatment.

The Department's AKART analysis for Outfall 002 (*see* draft fact sheet at p. 16: "BMPs were considered to be AKART") appears to be based on the assumption that AKART requires no more of an industry than it is already doing. A serious inquiry into whether "all known, available, and reasonable technology" actually is being applied at this outfall simply is not performed. Further, it is difficult to understand how AKART could be said to have been applied at Outfall 002 when *this very discharger* has demonstrated that treatment technology for this type of waste stream is known, available, and reasonable. The activated carbon and mixed media filter treatment currently in use at outfall 001 has demonstrated effectiveness in removing PCP and, to a lesser extent, Cr, Cu, and As. Moreover, as noted in the draft fact sheet, this treatment system would be more effective if it were properly operated and maintained by CPLC. *See* Draft Fact Sheet at p. 18: "Currently the carbon column is replaced when the removal efficiency is approximately 50%. However, improved removal of PCP by activated carbon can be accomplished by frequent replacement of the carbon column (e.g., when the removal efficiency is 80% or some other number)." Especially since the discharge volume at outfall 002 is smaller than that at outfall 001, there is no apparent reason why, at the very least, a comparable treatment system could not also be installed at outfall 002. And, as also noted in the draft fact sheet (at p. 16), bench tests indicate that there are other technologies that could be used

productively at this outfall for metals removal. Although these technologies may not be in current use for the treatment of stormwater runoff from wood preserving facilities, there is no showing that these are not "reasonable" technologies for this industry within the meaning of AKART.

Second, WAC 173-201A-100(8) specifies that an acute mixing zone may be established only if the discharger can demonstrate that "the concentration of, and duration and frequency of[,] exposure to the discharge[] will not create a barrier to the migration or translocation of indigenous organisms to a degree that has the potential to cause damage to the ecosystem." Such a demonstration has not, and cannot, be made here. The proposed mixing zone sits at the head of the salmon migration pathway in the Puyallup River. All five species of Puget Sound salmon (including the Endangered Species Act-listed White River Chinook) use this pathway during times when discharges -- including first flush discharges -- can be expected from Outfall 002. At these times, the concentrations of Cr, Cu, PCP, and As in the proposed mixing zone would, based on current, untreated discharge levels, exceed (and, for all but As, exceed by from one to three orders of magnitude) acute water quality criteria. It is likely that these concentrations would remain above water quality criteria for an extended period (certainly for more than an hour) and that damage to aquatic organisms would occur.

There has been no demonstration here that salmon (or other fish) passing through this area of the river at these times would choose (or be able) to avoid these concentrations, and there is no reason to presume that they would. Accordingly, it is reasonable to assume that salmon would be killed (or otherwise seriously harmed), and thus that this mixing zone would pose a barrier to migration that would have "the potential to cause damage" to this fragile component of the Northwest ecosystem, in violation of WAC 173-201A-100(8).[1]

Further, if the proposed mixing zone is larger than that specified in WAC 173-201A-100(8), and this reviewer has not determined whether that is the case, WAC 173-201A-100(10)(b) would require that the discharger also establish that the proposed mixing zone does not "have a reasonable potential to result in a loss of sensitive or important habitat, substantially interfere with the existing or characteristic uses of the water body, result in damage to the ecosystem, or adversely affect public health . . . " For the reasons set forth above, and in part 2(f) below, such a demonstration cannot be made here.

In short, since salmon already are a well-known imperiled species (as well as an important resource) in the Puget Sound area, since current discharges from outfall 002 likely are harming salmon, since the use of an acute mixing zone likely would perpetuate the destruction of salmon on a continuing basis, and since reduction of pollutant concentrations in the outfall 002 effluent would be technologically and economically feasible, no mixing zone should be allowed here.

(d) Even If a Mixing Zone Were Permissible, The Draft Permit Fails to Meet Water Quality Criteria Because It Allows One Year to Install a Diffuser at Outfall 002.

Even if the acute mixing zone specified in the draft permit were appropriate here, water quality criteria for Cr, Cu, PCP, and As will be violated *even beyond the edge of the proposed mixing zone* until the diffuser is installed and operational. *See* draft fact sheet at p. 23: "Without the diffuser, the proposed effluent limitations [] for arsenic, copper, and pentachlorophenol would not be protective of water quality." *See also* draft fact sheet at p. 35 (calculations demonstrating that discharges of chromium at proposed permit limit would violate water quality standard at less than 85 to 1 dilution).

[1] *Indeed, this would appear to meet the criteria for a "take" of a threatened species under the Endangered Species Act.*

(e) Even If a Mixing Zone Were Permissible, The Draft Permit Fails to Meet Water Quality Criteria Because It Does Not Establish Effluent Limits Necessary to Meet Chronic Water Quality Criteria at Outfall 002.

The draft permit does not contain any limits designed to meet water quality criteria for chronic toxicity. The rationale for not including such limits in permits for wood preserving facilities is set forth in the Department's January 15, 1993 "Fact Sheet for the Model Wood Preserving NPDES Permit" (at page 19) as follows:

The determination to use acute criteria rather than chronic criteria is based upon several conservative assumptions built into the permit.

Data indicate that pollutant loadings are highest during the first flush, gradually decreasing to some relatively constant level as the storm event progresses. The use of acute criteria coupled with the first flush monitoring *and no dilution zone* should result in no acute or chronic toxicity in the receiving waters.

(Emphasis added.) If an acute mixing zone were established here, the assumption of "no dilution zone" obviously would no longer be valid, and this rationale for not including chronic limits would no longer be applicable. Thus, if a mixing zone is established, chronic limits should also be set.

(f) The Draft Permit Fails to Meet Water Quality Criteria Because It Does Not Establish Effluent Limits Necessary to Meet Human Health Criteria.

As noted in the draft fact sheet, EPA set numeric water quality standards based on human health criteria for these receiving waters in 1992. See 40 CFR § 131.36. As set forth in the draft fact sheet, a comparison of pollutant discharge levels from Outfalls 001 and 002 (fact sheet, p. 11) with the applicable human health criteria (fact sheet, p. 20) demonstrates that the levels of several pollutants in the effluent exceed human health criteria by two to three orders of magnitude. Indeed, even at the 85 to 1 dilution claimed at the edge of the proposed mixing zone for Outfall 002, the concentrations of some pollutants would still exceed the relevant human health criteria. This is of concern, because the human health criteria were established based on risk estimates for persons eating fish living in the receiving waters, and these receiving waters are classified for, among other uses, fish rearing, spawning, and harvesting. The Puyallup River, especially, is an important source of salmon.

In spite of these data, however, no effluent limits have been set to ensure compliance with relevant water quality standards based on human health criteria. The rationale given in the fact sheet for this omission is that the Department has not yet formalized a policy for setting such limits for stormwater discharges. Failure to set such limits, however, is a violation of section 301(b)(1)(C) of the Clean Water Act. While we recognize that the setting of such limits may not be as straightforward as setting some other limits, it is certainly not impossible. Further, CPLC and other wood preserving facilities who were given NPDES permits based on the 1993 Model Permit have been on notice that limits based on human health criteria likely would be incorporated into their next permit. As noted in the Department's January 15, 1993 "Fact Sheet for the Model Wood Preserving NPDES Permit" (at page 25):

Dischargers covered by this permit are encouraged to keep in mind the likely future human health-based requirements when evaluating control options necessary to come into compliance with current permit effluent limitations.

Response: Please see response to Comment 4 under **Response to comments from Washington Toxics Coalition.**

Response to comments from Sara Blakeslee, Michael Kvoher, Merlaine Cook, Diane Regala, and Pia Dam of Tacoma, Susan and David Buhr of Renton

Comment: CPLC uses pentachlorophenol and CCA to treat wood. Two CPLC outfalls are contaminated with these chemicals, which are toxic to fish and accumulate in the environment. This permit needs to be stronger than the previous permit, not weaker. I am concerned that Ecology is planning to raise the allowable concentration limits and to allow very large mixing zones for these toxic chemicals instead of requiring CPLC to add or improve treatment to otherwise reduce the amount of toxic pollution they release- into the Puyallup River and Blair Waterway.

Ecology has required CPLC to try to improve best management practices at the facility. But the concentrations CPLC is discharging are still much higher than water quality standards allow. A treatment system is in use, but poorly maintained, at one outfall and the infrastructure is in place to add a treatment system for the other.

This reach of the Puyallup River is especially sensitive to toxic discharges. Every Puget Sound species of salmon migrates down the river and back up it again to spawn. An 85:1 acute-toxic dilution zone in the river will kill fish. With all of the efforts underway to save salmon, how can Ecology justify allowing such toxic discharges?

Here are my specific requests for changes in this draft permit:

- Eliminate the mixing zone for toxic discharges in both outfalls.
- Require the facility to achieve the final permit limits that were set in the previous permit and to meet water quality standards - especially in the Puyallup River.
- Add and improve treatment systems for both outfalls as needed.
- Limit the total amounts of toxic chemicals discharged, not just the concentrations.
- Require the facility to meet all of their discharge limits in less than six months.

Response: Please see **Response to comments from Washington Toxics Coalition**.

APPENDIX E – RESPONSE TO COMMENTS II

The Department of Ecology (Ecology) received written comments on the Cascade Pole and Lumber Company Draft National Discharge Elimination System (NPDES) permit during two public comment periods, one in October, 2000 and a second in March, 2001. Ecology also received oral comments at a public hearing in Tacoma on March 7, 2001. In May 2001, after the close of the second comment period, Ecology staff organized two meetings of the major commenting parties to exchange information and to discuss ideas Ecology developed for modifying the permit.

This Appendix (Appendix E - Response to Comments II) contains Ecology's response to comments received during the second public comment period and at the public hearing. The Department of Ecology revised the permit in response to these comments. Appendix D contains Ecology's response to comments received during the first public comment period.

During the second comment period, Ecology received written comments from the following organizations and individuals:

United States Environmental Protection Agency
National Marine Fisheries Service
United States Fish and Wildlife Service
Puyallup Tribe of Indians
Association of Washington Businesses
Citizens for a Healthy Bay
Peninsula Neighborhood Association
Pentachlorophenol Task Force
Port of Tacoma
Puget Soundkeeper Alliance
Puyallup River Watershed Council
Tahoma Audubon Society
Tacoma Pierce County Chamber of Commerce
Washington Toxics Coalition
Waste Action Project
Western States Petroleum Association
City of Tacoma City Council Members
Three Washington State Senators
Thirty-One Individuals

At the March 7, 2001 public hearing, Ecology received oral comments from the following organizations and individuals:

National Marine Fisheries Service
Puyallup Tribe of Indians
Association of Washington Businesses
Cascade-Pole and Lumber Company
Citizens for a Healthy Bay
Puget Soundkeeper Alliance
Tacoma Pierce County Chamber of Commerce
Washington Toxics Coalition
City of Tacoma City Council Members
Thirty-six Individuals

Attachment A includes a site location map.

1. Puyallup River Mixing Zone, Effluent Limits for Copper and Hexavalent Chromium to Meet Acute Water Quality Standards for Aquatic Life in the Puyallup River, Impacts to Endangered Species

Many commentors requested that Ecology not allow a mixing zone in the Puyallup River, or that Ecology reduce or re-examine the size of the mixing zone, or that Ecology issue the permit without change. Some raised detailed technical questions regarding the mixing zone analysis (Item 8 below). Resource agencies are particularly concerned about impacts to juvenile chinook salmon (*Oncorhynchus tshawytscha*) that use this area of the river, the Puyallup River Estuary, for rearing and acclimation to saltwater.

Ecology concludes that the dilution factor for the discharge to the Puyallup River should be reduced from the dilution proposed in the draft permit. The final dilution factor established in this permit (10:1) to meet acute water quality standards for copper and hexavalent chromium (chromium) is the dilution factor provided by ½ of 2.5% of the 7Q10.[2]

For final limits that will take effect 3 years from now, Cascade Pole has a choice. First, the company can re-do its mixing zone study using the 7Q10. In that case, Ecology will set final limits 18 months from now when the study is complete. Alternatively, Cascade Pole can accept the final limits listed in the permit – 156 ug/L for copper,; and 137 ug/L for hexavalent chromium. For the first three years of the permit, interim limits will apply.

In revising the dilution factor, Ecology staff took several items into account:

a) the Washington Administrative Code (WAC 173-201A: Water Quality Standards for Surface Waters of the State of Washington);
b) the listing status of Puget Sound chinook salmon (*Oncorhynchus tshawytscha*) and Coastal-Puget Sound bull trout (*Salvelinus confluentus*), two species protected under the federal Endangered Species Act;
c) estuarine habitat requirements of chinook salmon;
d) reports on habitat conditions in the Puyallup River Estuary, the area of the discharge;
e) a biological assessment and addendum prepared by consultants to the discharger;
f) engineering studies prepared by consultants to the discharge and the Fact Sheet for the Draft Permit;
g) effects of hydropower operations on freshwater flow through the estuary;
h) river flow data from the United States Geological Survey gage, Puyallup River at Puyallup, upstream of the discharge point; and
i) the intermittent nature of the discharge.

A. Washington Administrative Code

WAC 173-201A-100 describes the criteria Ecology uses to authorize mixing zones. These criteria include WAC 173-201A-100 (3), 4) and (6):

(3) Mixing zone determinations shall consider critical discharge conditions.
(4) No mixing zone shall be granted unless the supporting information clearly indicates the mixing zone would not have a reasonable potential to cause a loss of sensitive or important habitat, substantially interfere with the existing or characteristic uses of the water body, result in damage to the ecosystem, or adversely affect public health as determined by the department.
(6) The size of a mixing zone and the concentrations of pollutants present shall be minimized.

[2] The 7Q10 is the 7-day average low flow with a recurrence interval of 10 years (Washington State Department of Ecology, 1992).

B. Listing status of Puget Sound chinook salmon (Oncorhynchus tshawytscha) and Coastal-Puget Sound bull trout (Salvelinus confluentus)

Puget Sound Chinook Salmon

The National Marine Fisheries Service (NMFS) designated Puget Sound chinook salmon as threatened under the federal Endangered Species Act (ESA) on March 24, 1999. The listing defines as threatened all naturally spawned populations of chinook salmon from rivers and streams flowing into Puget Sound and five hatchery stocks including White River spring chinook salmon. Several factors have contributed to Puget Sound chinook salmon population declines including harvest management, hatchery influences, water diversions, impediments to fish passage and habitat modification (64 FR 14308).

NMFS designated critical habitat for Puget Sound chinook salmon on February 16, 2000. The ESA defines critical habitat as "…the specific areas within the geographical area occupied by the species…on which are found those physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protection… ." Critical habitat for Puget Sound chinook salmon includes the water, substrate and riparian zone of all marine, estuarine and river reaches accessible to listed chinook salmon in Puget Sound (65 FR 7764).

NMFS published a final rule (ESA Section 4d rule) protecting threatened Puget Sound chinook salmon on July 10, 2000. Under the 4d rule, the ESA Section 9 prohibition on take of endangered species applies to threatened Puget Sound chinook salmon. The 4d rule also identifies 13 exceptions (limits) to the Section 9 take prohibitions. Wastewater discharges and permits authorizing discharges are not among the 13 activities that NMFS identified for exception to Section 9 prohibitions. Instead, the Take Guidance published with the 4d rule describes the discharge of pollutants as one of twelve activities that "as a general rule may be most likely to result in injury or harm to listed salmonids." The rule emphasizes that:

> "Whether injury or harm is resulting from a particular activity is entirely dependent upon the facts and circumstances of each case. The mere fact that an activity may fall within one of these categories does not at all mean that that specific activity is causing harm or injury. These types of activities are, however, those that may be most likely to cause harm and thus violate this rule. NMFS' ESA enforcement will therefore focus on these categories of activities."

The 4d rule became effective on January 8, 2001 (65 FR 42421).

On April 17, 2001, the Puget Sound Technical Recovery Team published the draft report, "Independent Populations of Chinook Salmon in Puget Sound." The draft report describes twenty-one geographically distinct populations of chinook salmon in Puget Sound, including White River and Puyallup River populations. NMFS draft technical guidance describes the identification of independent populations as an initial step in recovery planning (NMFS, 2000; NMFS, 2001).

Bull Trout

The United States Fish and Wildlife Service (USFWS) designated bull trout within the coterminous United States (the lower 48 states) as threatened under the federal Endangered Species Act on November 1, 1999. The factors that are likely contributors to the bull trout population decline are similar to the factors contributing to the decline of chinook salmon (64 FR 58909).

USFWS has not designated critical habitat for the species "because the biological needs of the species …are not sufficiently well known to permit identification of areas as critical habitat" (64 FR 58909).

USFWS published a special provision with the final listing rule that extends the ESA Section 9 prohibition on take of endangered species to threatened bull trout. USFWS also identified seven activities that could result in a violation of section 9 prohibitions. Among the activities that could result in a violation of section 9 prohibitions are "Discharges or dumping of toxic chemicals, silt, or other pollutants into waters supporting bull trout that result in death or injury of the species… " (64 FR 58909).

USFWS recognizes the Coastal-Puget Sound bull trout population as one of five distinct populations. The Coastal-Puget Sound population is significant to the species because it contains the only anadromous population in the coterminous United States. The other four populations are located in the inland Pacific Northwest.

C. Estuarine Habitat Requirements of Chinook Salmon

An estuary is "a semi-enclosed coastal body of water which has a free connection with the open sea and within which sea water is measurably diluted with freshwater derived from land drainage" (Dyer, 1972). In Puget Sound, estuaries occur in the lower reaches of rivers where freshwater mixes with saltwater from Puget Sound. Puget Sound itself is an estuary, where the combined flow of inland rivers meet and mix with ocean water from the Pacific Ocean (Kruckeberg, 1991; Puget Sound Water Quality Action Team, 2000).

Horne and Goldman (1994) describe the phenomenon of the saltwater wedge in estuaries and explain why estuaries are productive environments:

> "Where salt water and freshwater meet, the denser salt water sinks below the lighter river water. The salinity-density effect dominates over any temperature-density effect. The result, called a *salt wedge*, is a permanent feature of most estuaries. The salt wedge is not fixed in place but moves up and down the estuary with the daily tides. It moves seasonally down the estuary with high winter flows and up the estuary during low summer discharge…
>
> "The saltwater-freshwater interface is more than just an interesting physical phenomenon: it provides an excellent site for the precipitation or *flocculation* of organic and inorganic particles.[3] A common technique in chemistry is to add a salt to a solution to precipitate an otherwise soluble compound. This "salting-out" occurs continuously at the salt wedge interface. River silt particles of 4 to 60 um diameter flocculate into much larger clumps when the fresh water meets the mass of cations, such a Na^+ and Mg^{2+}, in seawater. Flocs may further sorb soluble inorganic and organic compounds such as phosphates and the dissolved organic matter (DOM) common in rivers. The resulting large particles fall to the bed of the estuary and may form mounds visible to divers. The particles are often supposed to be held in a *nutrient trap* by the counter flow currents in the salt wedge. If the flocculated particles remain for more than a few hours near the salt wedge, bacterial growth provides a concentrated food source for both planktonic and benthic animals. The zone of highest benthic animal production is often associated with the salt wedge. The wedge moves up and down the length of the estuary, carrying planktonic organisms and fish, which also benefit from high productivity."

Pacific Salmon pass through the estuaries of their natal rivers during two periods of the lives. First, as juveniles, chinook and other salmon species reside for some period of time in estuaries as they acclimate to saltwater conditions. Second, as adults, salmon occupy estuaries as they return from the ocean to migrate to freshwater spawning areas (Meehan, W.R. 1991). The advantage of moving from freshwater to

[3] Flocculation is a term that describes the aggradation of smaller particles to form larger ones ("flocs") under conditions of gentle mixing (Tchobanoglous and Schroeder, 1985).

saltwater is that salmon can take advantage of greater amounts of food in the North Pacific Ocean. However,

> "… whatever the advantage…moving from fresh to salt water puts tremendous stress on the fish and requires much preparation. Before entering the sea, the salmon change from stream-dwelling parrs to smolts, a transformation that involves physiological and behavioral adaptations to the saltwater environment. For example, when a parr becomes a smolt, it increases the purine and guanine in its scales. As a result, the young salmon's natural camouflage, which is well suited to hiding in a stream, gives way to a uniform silver on its sides and undersides—a coloration better suited to life in the sea. Because oxygen concentrations are lower in seawater, the salmon smolt must also produce a different, more efficient hemoglobin to cope with the decrease in oxygen. Furthermore, salt pumps in the gill membranes must reverse. In fresh water these pumps prevent dilution of plasma electrolytes, but in salt water the pumps must keep electrolytes out to prevent concentration above normal levels. In addition to the physiological changes, the salmon must undergo major behavioral changes. Life under an overhanging bank in a small stream is quite different than life in the ocean, where the habitat is open and predators abound." (Lichatowhich, 1999, references omitted)

Of the Pacific Salmon, chinook salmon are the most dependent on estuarine habitat "since members of all life history types feed and grow for some time in estuaries and fry migrants appear totally dependent on the estuary to provide nursery habitat" (Healy, 1982). While in the estuary, juveniles feed on small invertebrate animals and add 3-5% of the body weight per day (Healy, 1982).

Juvenile chinook feed in different locations within estuaries depending on their age and size as they adjust to salt water conditions over a period of several weeks, or longer:

> "The diverse racial structure of chinook salmon populations results in migrations of juveniles into estuaries through much of the year. Most outmigrating juvenile chinook are subyearlings (primarily from fall spawners) and yearlings (from spring spawners) and initiate their migration in early March. Peak migration occurs in late April to early June although some fish continue to move into estuaries through August and September. Chinook migrate primarily at night, although slightly less so than coho.
>
> "Although similar to coho in their general life history patterns, juvenile chinook salmon reside much longer in estuaries. Chinook may be found in some estuaries for as long as 29+ weeks and individuals may reside for up to 189 days in larger systems such as Grays Harbor. Smaller fish tend to reside within the estuary longer, indicating that a threshold emigration size exists.
>
> "Juvenile chinook salmon of different sizes utilize a number of estuarine habitats … during their lengthy estuarine residence. Subyearlings and fry occur mainly in salt marshes where these habitats are available. However, mudflat, foreshore areas can be utilized for some time by larger subyearlings before they move into neritic habitats.
>
> "Juvenile chinook have the most diverse prey spectra, reflecting their extended estuarine residence, diversity of size classes, and different estuarine habitats utilized. Fry and subyearlings in salt marsh and other shallow habitats prey principally upon emergent insects and epibenthic crustaceans such as gammarid amphipods, mysids, and cumaceans." (Simenstad et al., 1981)

Simenstad (2000) reports that estuarine habitat can be an important factor determining if a fish survives to adulthood:

> "…the early life history phase between freshwater and the ocean can often be a very important determinant of the return as adults. Juvenile salmon use estuaries for physiological adaptation, foraging and refuge. Some aspects are opportunistic, such as the physiological requirement to adapt from freshwater to saltwater. Other attributes of estuaries promote behaviors that enhance survival, such as minimizing mortality due to predation by seeking estuarine shallow water, turbid habitats and foraging on the typically high and concentrated densities of potential food organisms available in estuaries. "

In the Puyallup River system, Puyallup Tribe of Indians fisheries staff have found juvenile chinook in the Commencement Bay area as early as February and as late as September during spot checks, sampling events that were not part of larger studies (Ladley, personal communication). Stuart and Fisher (1999) suggest that juvenile chinook are in the estuary between April and August. Studies at the Gog-le-hi-te Wetland near the Cascade Pole and Lumber Site show juvenile chinook salmon present in the estuary during spring sampling, March to June (Thom et al. 1987; Thom and Simenstad, 1988; Thom et. Al. 1990; Shreffler et al. 1990; Thom et. Al. 1991). These researchers did not sample during months outside of the expected peak migratory window.

D. Habitat Conditions in the Puyallup River Estuary

The Puyallup River Estuary extends from the river mouth at Commencement Bay upstream to approximately the Interstate-5 (I-5) bridge, the limits of saltwater intrusion, and beyond some distance to the limit of the tidal backwater effect. This reach of the river flows through a straightened, engineered channel. Its banks are generally devoid of natural vegetation and are rip-rapped in places. The discharge point is at approximately the mid-point of the salt-water portion of the estuary, 0.8 miles above the river mouth (Ebbert et al, 1987; Pelletier, 1993).

The salt-water portion of the Puyallup River Estuary was originally larger than it is at present. The estuary originally covered several thousand acres of intertidal delta land north of present day I-5. According to Simenstad (2000, references omitted):

> "Historic accounts and photographs indicate that where pervasive riverine input or peripheral drainage systems (e.g., Hyleblos Creek) intersected the delta, the prevailing habitat was oligohaline-brackish emergent marsh dominated by sedge meadows with broadleaf cattail and creeping spikerush at the freshwater-tidal boundaries…
>
> "Juvenile salmon utilization of the historic delta-Bay landscape was likely prolonged and widely dispersed. In the extensive tidal-freshwater flood plain, considerable side-channel, relict oxbow and other low-energy environments provided extensive opportunities for over-wintering by sub-yearling coho and possibly steelhead. Within the freshwater-brackish or oligohaline reach of the estuary, juvenile ocean-type chinook[4] … had the opportunity to occupy low-energy side channel and marsh habitats to accommodate the osmoregulatory changes that accompanies exposure to salinity. There were also considerable opportunity for salmon to move into expansive emergent marshes of the delta at high tides, where they were able to retreat to the complex dendritic tidal channel systems on ebbing

[4] There is a footnote here in the quoted text: "Ocean-type (e.g., the most estuarine dependent) chinook dominate the life history composition of most Puget Sound fall chinook populations, but spring and summer chinook populations in Puget Sound watersheds are also known to have varying percentages of ocean-type migrants."

> tides. … As is evident in data from more recent samplings of juvenile salmon, sub-yearling salmon fry and small fingerlings … would have likely have stayed within the influence of the river's buoyant turbidity plume or in shallow water...
>
> "In addition to the expanse of transitional habitats providing opportunity for physiological adaptation and refuge from predators, the historic habitats of the delta-Bay landscape would have produced an array of food organisms favored by the various salmon species, life history types and sizes during their estuarine migration. Although often ignored when considering estuarine foraging by salmon, the tidal floodplain's freshwater wetlands, side-channels and riparian complexes would have generated a multitude of insects, as both aquatic larvae and pupae and as adults, that are prominent components of juvenile salmon diets as they emigrate from watersheds.

The area downstream of I-5 is now the Tacoma Tideflats Industrial Area. The salt-water estuary today is restricted to the channelized reach of river downstream of I-5 and a new delta is forming at the mouth of the channelized river. Where salmon previously transitioned to salt water using several thousand acres of habitat, they now make that transition in a more restricted environment. Again, according to Simenstad (2000):

> "Relict natural aquatic habitats are highly fragmented and dispersed across the delta and Bay with few natural corridors linking them. The few sites are typically small, surrounded by extensive development and vulnerable to a variety of stressors, from noise to toxic spills. The delta has essentially been displaced to the steep edge of Commencement Bay that historically constituted the western edge of the mud flat but there are no tidal floodplain, distributary channels or cross channels or cross-delta flow of water, sediments, organic matter or animals. While freshwater from the river is still advected into the waterways as a relatively thin surface plume, the extensive spreading of that plume across the historic delta's intertidal wetlands during high tides is not possible. Thus, the Bays' estuarine wetlands are no longer bathed by lateral riverine."

Consultants to the US Army Corps of Engineers report that of 5948 acres of estuarine intertidal mudflat and marsh existing in at the time of European settlement, 244 acres remained in 1991. These figures agree approximately with a 1981 estimate of 195 acres of habitat remaining in the area (David Evans and Associates, 1991). These figures suggest that development has reduced habitat in the Puyallup River Estuary to 4% of its original extent.

E. Biological Assessment and Addendum

Cascade Pole and Lumber Company completed a Biological Assessment and Addendum to the Biological Assessment as part of project permitting. The documents "were not written expressly to support the revised NPDES permit limits…(but were)… provided as a means to consider the actual effects that could be occurring under the current operating regime in the absence of biological data collected from the site." (Stuart and Fisher, 1999; Fisher, 2001)

In reviewing potential affects of diffuser installation and operation, the Addendum summarized three years of effluent data from Cascade Pole's discharge to the Puyallup River (outfall 002) and compared this data to laboratory toxicity data. Most of the laboratory data summarized in the Addendum addresses lethal effects. Commonly, the toxicity data reported is the concentration and duration of exposure that resulted in 10-50% mortality for the organisms in the test. All of the test organisms were salmonids in the genus *Onchorhynchus*, including juvenile chinook salmon.

The data suggest that of the compounds reviewed, copper is the most toxic to juvenile salmon and trout (Table 1). Copper concentrations in the mixing zone allowed under the draft permit, if not adequately

diluted, could exceed concentrations shown to be lethal to juvenile salmon and trout over a 24-hour period (Table 1). Such exposure could occur during a 6-month, 24-hour event, the design discharge. The discharge is pumped through a diffuser and one effect of the pump is to meter the 24-hour event and thereby extend its duration to 28 hours (Fisher, 2001). However, stormwater detention located on site could reduce the duration depending upon the amount of storage available when a storm begins. Rainfall equal to a 6-month storm occurs, on average, twice a year as 6 months is by definition the average period between such events (Dunne and Leopold, 1978). Smaller storms that form the bulk of Puget Sound storm events would result in multiple exposures of reduced duration relative to the 6-month storm.

Both the Biological Assessment and the Addendum concluded that the discharge would not likely affect ESA listed or candidate species, either directly or indirectly through pathways that include prey organisms. The Assessment and Addendum also noted the benefit of moving the discharge point away from the shallow shoreline area where juveniles had previously, presumably, been exposed to undiluted discharges.

Table 1
Pollutant Effects on Juvenile Salmon and Trout
In Freshwater (Source: Fisher, 2001)

Element	Impact	Duration Of Test	Conc. in Test (ug/L)	Draft Limit (ug/L)	Final Limit (ug/L)	Acute FW[2] Standard (ug/L)
Copper	Mortality[1]	1-4 day	170-48	390	156	17 (hardness = 100 mg/l)
		8 days	30-19			
		31 days	18			
		100 days	19-8			
		165 days	5			
	Avoidance	Not Reported	8			
	Reduced Feeding	14 days	6			
Chromium (Hexavalent)	Mortality	2-4 days	65k-11k[3]	1155	137	15
		10 days	3800			
		28 days	960-540			
		84 days	200			
	No Mortality	10 Days	2500			
PCP (Pentachlorophenol)	Mortality	2-4 days	370-104	63	18	9 (pH=7.0)

[1] 10-50% mortality.
[2] FW: Freshwater. Standard is to be met outside of the mixing zone.
[3] 11,000-65,000 (k=1,000)

F. Engineering Studies Prepared by Consultants to the Discharger (AKART and Mixing Zone Studies)

In 1998, Cascade Pole and Lumber Company completed an AKART (All Known Available, and Reasonable Methods of Prevention, Control and Treatment) study. Among other items, the study examined the feasibility of meeting the final effluent limits contained in the 1993 permit. Those final limits would have required Cascade Pole to meet water quality standards for metals without a dilution credit. As described in the Fact Sheet,

> "Treatability studies for removal of metals were conducted for Outfall 002. These studies included four possible treatment systems employing coagulation/sedimentation, iron co-precipitation, and proprietary adsorption media. Iron co-precipitation was shown in controlled, vendor bench-tests to achieve test results that were below the final effluent limit concentrations. However, metals removal achieved in bench tests cannot be considered indicative of a full-scale operation; bench tests are conducted solely to test feasibility and pilot testing would be necessary to assess full-scale system performance, reliability and cost. No full-scale systems are known to exist for treatment of metal bearing storm water runoff from wood preserving facilities. Additionally, the scientific literature for this technology indicates that achieving the final effluent limits would be difficult and that treated effluent concentrations would remain well above these limits.

The study concludes that Cascade Pole's discharge would not meet water quality standards for metals in the Puyallup River without a mixing zone.

In 1998, Cascade Pole and Lumber Company also completed a Mixing Zone Study. To calculate available dilution consistent with 1993 permit requirements, Cascade Pole assumed a river flow of 2510 cubic feet per second (2510 cfs), the mean daily flow in the river during the fall based upon a ten-year period of record. The study examined conditions during low, high, flood and ebb tides as required by the 1993 permit. The analysis identified low tide as the critical tidal condition (SECOR, 1998). The mixing zone study and follow-up analysis predicted that the discharge will achieve 85:1 dilution within 20 feet of the diffuser outfall during low tide and with river flow of 2510 cfs (Dawson, 2000).

G. Effects of Hydropower Operations on Freshwater Flow Through the Estuary

Puget Sound Energy (PSE) operates hydroelectric facilities on the White River upstream of the discharge point. PSE discharges up to 2000 cfs from Lake Tapps to the White River during power production (Collins, 1999; Sprague, personal communication).

Hydropower operations can change freshwater flow to the estuary in a manner not captured by the daily average flow statistics used in the mixing zone study. The average daily flow values used in the mixing zone study are based upon the average flow for each day in the record and do not consider variations during the day that can be important.

For example, during the week of July 10, 2001, average daily freshwater flow to the estuary on any given day was approximately 2500 cfs. However, for much of that week, flows during the day when power operations discharged to the river were 3500 cfs. Overnight, flows dropped to 1500 cfs, about 1000 cfs less than the average flow for the day (Attachment A).

For that week, overnight flows were below flows assumed in the mixing zone analysis and there was potential for receiving water violations if Cascade Pole were discharging at levels allowed in the draft permit. That is, the duration of these flow reductions is longer in duration than the 1-hour duration associated with impacts from violations of acute water quality standard (USEPA, 1986; WAC 173-201A).

This potential for flows in the river to fall below 2510 cfs is not solely an artifact of current drought conditions. It is commonly a result of seasonal river flow in combination with seasonal upstream hydropower operations.

H. River Flow Data from the United States Geological Survey Gage on the Puyallup River at Puyallup

The United States Geological Survey publishes daily flow statistics for the Puyallup River at Puyallup Gage upstream of the discharge point. Using data available on the USGS web site (1928-1998), Ecology staff calculated the percentage of days in the fall (adult salmon return) and spring (juvenile outmigration) that the river is below 2510 cfs, the value used in the mixing zone analysis.

When the flow data is adjusted for expected hydropower operations, freshwater flow in the river falls below the amount needed to dilute the discharge on almost half (46%) of the days in the spring months when juvenile salmon are in the estuary (Table 2). When adults are in the river in the fall, the percentage of days with insufficient flow in the river rises to 83%.

Table 2
Percent of Days River Flow is Below
2510 Cubic Feet Per Second

	Adjusted for Hydropower[1]	Not Adjusted for Hydropower
Spring (March-May)	46%	16%
Fall (Sept.-Nov.)	83%	74%

[1] Daily mean discharge data were divided into upstream Puyallup and White River components and White River flows were adjusted by the seasonal average PSE discharge with allowance for in-stream flows (spring: 350 cfs, fall, 275 cfs; Sprague, personal communication). Data from USGS gage, Puyallup River at Puyallup, 1928-1998.

Ecology staff calculated the 7Q10 for the river using the 1928-1998 water year period of record. The 7Q10 using unadjusted data (data not adjusted for hydropower operations) is 741 cfs.[5] This figure is similar to figures calculated previously by Ecology staff. In a 1993 study, Ecology reported the 7Q10 to be 774 cfs using data through 1987. In 1994, staff reported the 7Q10 as 757 cfs using data through 1991 (Pelletier, 1994). The downward trend in the 7Q10 is a result of drier conditions in the last ten years. The mean harmonic flow of the river (1928-1998), relevant to human health criteria for carcinogens, is 2386 cfs.

[5] Ecology staff calculated the 7Q10 for water years 1928-1998 using the method of Chow (Haan, 1977) for log-normally distributed data. Pelletier (1994) assumed a Log-Pearson Type III distribution. Because the data skew is zero, the two distributions are identical.

Discussion

Ecology sets effluent limits so that receiving waters meet water quality standards outside of a mixing zone authorized in a permit or order. A violation of acute water quality standards outside of the mixing zone should not occur more frequently than once every three years on average (WAC173-201A-040(3)(c)). Such violations can occur when the predicted dilution is unavailable (e.g. during lower than expected river flow) when the discharge is at are or near the maximum concentration allowed under the permit.

Application of the draft permit limits could result in a violation of acute water quality standards outside of the mixing zone more than once every three years on average if Cascade Pole is discharging at or near the draft permit limits. Violations would occur when flows are below 2510 cfs. Because flows will often be below 2510 cfs, especially when hydropower operations are taken into account, even in spring when flows are highest, discharges at or near the draft limits could result in receiving water violations for acute standards more frequently than once every three years on average.

As a result, Ecology has reconsidered the river flow to use as the design or critical river condition for this discharge. In this instance, there is a basis for a dilution credit in the river based upon a percentage of the 7Q10.

The 7Q10 is Ecology's mandatory critical condition in rivers and streams for steady-state dischargers (WAC 173-201A-100 (3): "For steady-state discharges to riverine systems the critical condition may be assumed to be equal to the 7Q10 flow event unless determined otherwise by the department.") WAC 173-201A-100 (3) does not state a preference for or preclude use of the 7Q10 as the critical or design flow for an intermittent discharge. Nor does this section state a preference for or preclude use of the 7Q10 in the estuary of a river, although WAC 173-201A-100 (8) specifically allows its use in estuaries with "flow characteristics that resemble rivers."

The 7Q10 has utility for use as the acute design condition due to its probability of occurrence in any three-year period. The probability that a flow equal to or less than the 7Q10 will occur in any three-year period is approximately 30%. Hence, there is reasonable probability (70%) that the 7-day average low flow will not fall below the 7Q10 during a three-year period and create a condition that could contribute to a violation of standards.

Limiting the dilution credit to a percentage of the design or critical flow is also appropriate in this instance because of the importance of the receiving water to a species, chinook salmon, protected as endangered by the recently effective 4d rule. This estuary, including the bed, riparian area and water column, is critical habitat for this species. Limiting the dilution credit to a percentage of the critical flow minimizes the loss of critical habitat, in this case, the water column.

In addition, Ecology has used the 7Q10 as the design/critical condition for other wood treating facilities discharging stormwater to estuaries. Ecology developed effluent limits for All-Weather Wood and Exterior Wood using the 7Q10. These facilities discharge to the Columbia River estuary upstream of the salt-wedge wedge.

In general, Ecology uses a percent of freshwater flow to cap dilution factors and set effluent limits in rivers, or in river estuaries above the salt-water wedge where the estuary has "flow characteristics of a river, i.e. unidirectional flow. Ecology generally does not typically use this method in the salt-water portion of an estuary that is subject to flow reversal.

One reason that the freshwater cap is not applied in estuaries is that it is a simplified method of setting dilution credit that may over-estimate available dilution in estuaries. A simplified method of capping dilution based upon flow can be used in rivers because critical conditions in rivers (depth and velocity)

are largely flow dependent. However, critical conditions in estuaries are only partly flow dependent. A common critical condition in estuaries, zero-velocity, is dependent on both flow and tides. Zero-velocity occurs when tidal back-water creates a lake-like condition in the estuary. In such cases, the discharge disperses slowly from the diffuser area and little dilution occurs. To evaluate such site-specific situations, Ecology generally turns to mixing zone models rather than simplified analysis.

In this instance, Ecology is using a percent of the freshwater flow to set effluent limits absent a mixing zone analysis. Ecology considers this simplified method appropriate for the assumed acute critical condition, low tide, where depth is the limiting factor as it is in rivers but acknowledges that this method may over-estimate available dilution.

There is some speculation that use of the 7Q10 is overly conservative, that it does not rain in Tacoma during low river flows. However, in the past, the 7-day average low flow has occurred in most months of the year. Most commonly, the 7-day average low flow occurs in September and October when adult salmon are in the estuary. Because of the high probability of rain in any month in the Puget Sound Region, it is not unlikely to have rainfall events during low river flow conditions (Table 3). During this past spring during juvenile outmigration (April-June 2001), rainfall was above normal (5.9“ vs. 5.5” at Sea-Tac) when river flows were below normal, according to National Weather Service and USGS data. Ecology staff as a result do not consider use of the 7Q10 to be overly conservative.

Table 3
Number of 7-Day Low Flow Periods
By Month, 1928-1998[1]

	Aug	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Apr.
# of Occurrences (1928-1999)	3	19	33	9	3	2	2	2
Mean Precipitation[1] (inches – “)	1.3”	2.2”	3.2”	4.9”	6.7”	5.5”	4.3”	2.2”

[1] (Perrich, 1992)

There is also some speculation that use of the 7Q10 is overly conservative since river flows seemingly have not fallen below the 7Q10 flow in recent years. This is not the case however. Between 1987 and 1998, the 7-day average low flow fell below 741 cfs in three of twelve years (1987: 599 cfs; 1989: 546 cfs; and 1994: 507 cfs).

Ecology staff also considered that river flows will increase during rainfall and that increases in river flows will increase dilution in the river. Ecology staff calculated the time it would take such flows to reach the site. Such flows would presumably originate in the foothills were rainfall intensity increases markedly over that in the lowland Puget Sound region. However, even if flows originate as close as the town of Puyallup, they would not reach the site in time to prevent a 1-hour exceedance in standards. Water traveling the eight river miles from Puyallup would have to travel at ten feet per second to reach the site in one hour. Consultants to the discharger calculated that at low tide, the time of highest water velocity, water travels at about 1/10th that speed in the river – about 1 foot per second. Unfortunately, increases in

river flows take some time to reach the estuary, the lowest point in the watershed. Such flow increases would arrive sometime after a one-hour exceedance of acute standards has occurred.

Finally, Ecology staff note again that many commentors requested that Ecology not allow a mixing zone, while the AKART study concluded that achieving water quality standards without a mixing zone at this location is not feasible.

Ecology is establishing final effluent limits in this permit using a flow equal to 2.5% of the 7Q10, the maximum percentage allowed under the WACs for rivers and the design flow (7Q10) that Ecology commonly uses to set effluent limits in rivers and stream. Ecology believes that this maximum adequately represents the actual available dilution at the site during the critical condition, the 7Q10. However, Ecology is reducing the dilution factor used to calculate effluent limits by a factor of two to account for an expected increase in effective discharge. In doing so, Ecology recognizes that Cascade Pole will have to reduce the length of the existing diffuser by a factor of 2 to comply with requirements that the mixing zone occupy no more than ¼ of the width of the river at the critical condition. Reducing the diffuser length by half and maintaining the 1-cfs discharge flow will double the effective discharge rate (per unit length of pipe). Hence, reducing the dilution factor by a factor of two to establish final effluent limits is appropriate. [6] [7]

There are factors that suggest that Ecology should reduce the allowable dilution credit from that derived using the maximum 2.5% of the critical flow. These factors include:

- the lack of estuarine habitat in the Puyallup River watershed;
- the importance of estuaries to Puget Sound chinook salmon;
- the listing status (threatened) of chinook salmon;
- the effects of hydropower operations that are not captured in the daily flow data used to calculate the 7Q10; and
- consideration of slack-water conditions.

There are also factors that suggest that Ecology's should grant the maximum 2.5% of the 7Q10. Ecology would normally grant this maximum in rivers unless hydraulic analysis shows that the discharge will not achieve that dilution. Additionally, the rainfall driven, intermittent nature of the discharge reduces the probability and duration of a discharge at low river flows.

On balance, these factors suggest that Ecology could recommend a percentage of the 7Q10 that is less than the maximum allowed by rule in rivers.

However, Ecology believes that effluent limits established in this permit are protective of aquatic life, including endangered salmonids. The effluent limit for copper (156 ug/L) is below the concentration reported to cause lethal effects to juvenile chinook salmon over a 24-hour period (170 ug/L, Table 1). Hence, at the design condition (24-hour discharge at the 7Q10), there should be no acute effects to endangered species from the discharge. The intermittent nature of the discharge should limit the potential for chronic effects.

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[6] The dilution factor is equal to the sum of the river flow rate plus the discharge flow rate, divided by the discharge flow fate. Ecology uses the dilution factor, rather than river and discharge flows, to calculate effluent limits, but the effect of river and discharge flows is captured in this factor. In this case, the dilution factor before adjustment is approximately (18+1)/1 = 19. After the adjustment describe in this paragraph, the Dilution Factor is approximately (18+2)/2 = 10.

[7] Presently, the mixing zone from the 100-foot long diffuser occupies ¼ of the river width at 2510 cfs. However, river width at the 7Q10 (741 cfs) will be one-half of the width at 2510 cfs. Ecology staff estimated the change in river width using the method outlined by Leopold, et. al (1964) for rivers with non-cohesive beds.

Because of the conservative nature of the assumptions used to develop the mixing zone, Ecology expects that the mixing zone will not have a reasonable potential to cause a loss of sensitive or important habitat, substantially interfere with the existing or characteristic uses of the water body, result in damage to the ecosystem, or adversely affect public health. In addition, the final effluent limits (copper 156 ug/L; hexavalent chromium 137 ug/L) are below levels that would cause a lethal effect to juvenile chinook salmon at any point within the mixing zone over a 24-hour exposure period, approximately the design duration of this discharge. Outside of the mixing zone, the discharge will meet both acute and chronic standards for freshwater. The intermittent nature of the discharge suggests that the probability of chronic effects to juvenile chinook salmon inside or outside of the mixing zone is low.

As a result, Ecology approves a mixing zone to meet acute water quality standards for copper and hexavalent chromium based upon a dilution factor calculated using ½ of 2.5% of the 7Q10. Based upon the final dilution factor (10:1), the final effluent limit for copper is 156 ug/L and the final effluent limit for hexavalent chromium 137 ug/L. At the acute critical condition (7Q10 river flow), the mixing zone will not occupy more than 25% of the river width or extend in any horizontal direction from the discharge port a distance greater than $1/10^{th}$ of the sum of two hundred feet plus the depth of water over the discharge port(s) as measured or calculated during mean lower low water with river flow at the 7Q10.

The final permit allows a three-year compliance period to meet these final limits and to modify the diffuser system if necessary to achieve compliance with water quality standards outside of the mixing zone during the critical condition (7Q10 river flow). The performance-based limit in the draft permit for Copper, 390 ug/L, and the existing limit for Chromium that is now in effect, 1030 ug/l, will be the interim effluent limits for the first three years of the permit. We did not retain the draft permit's performance-based limit for chromium (1155 ug/l) as an interim limit in this permit because Cascade Pole has demonstrated its ability to consistently meet the 1030 ug/l interim limit contained in the previous permit.

The final permit also allows Cascade Pole the option to submit a new mixing zone study (effluent mixing study) for the 7Q10 critical condition. The study will be based on dilution zone models and field studies as needed. Ecology generally uses the results from such studies to set final effluent limits in estuaries and would have used the results from such a study to set limits with this permit had results for the 7Q10 critical condition been available. The new study would address the combined effects of the two outfalls in the Puyallup River - Outfall 002 and the bypass – an effect that Ecology did not address when calculating final limits for this permit.

If Ecology approves a revised final study, due 18 months following the permit effective date, Ecology may propose revised final effluent limits subject to public review and comment.
Ecology does not intend to change the compliance date for meeting final limits as revised final limits based upon a mixing zone model should not differ greatly from the final limits adopted here.

2. Effluent Limits to Meet Chronic Aquatic Life Water Quality Standards in the Puyallup River

Many commentors were concerned about potential sub-lethal effects of the discharge. Others noted that techniques to develop chronic, water quality-based effluent limits for continuous discharges might not be appropriate for this intermittent discharge. In response to comments, and with authority delegated by EPA, Ecology committed at the March 7 public hearing to consider effluent limits to meet chronic water quality criteria in this permit.

Effluent limits to meet acute water quality standards are, in this instance, more protective than the effluent limits necessary to meet chronic standards. The counter-intuitive result (for some) is an artifact of the

different mixing zones allowed under WAC 173-201A-100 to meet acute and chronic standards and the statistical calculations used by Ecology and EPA to set effluent limits to meet these standards. This phenomenon has been previously noted on the Puyallup River for other compounds (Pelletier, 1993).

Hence, Ecology will not apply effluent limits to meet chronic water quality standards as those limits are less protective than limits to meet acute standards.

Ecology is requiring Whole Effluent Testing for Chronic Toxicity to confirm that the discharge is not toxic at sub-acute levels to aquatic life. The permit requires Cascade Pole to use Fathead Minnow and a Daphnid but allows Cascade Pole to propose an alternative protocol using a juvenile salmonid. Ecology does not have a standard protocol for salmonid testing but will work with the discharger to develop one.

The dilution factor to use in the testing shall be 89:1, ½ of the maximum allowable (25% of the 7Q10). Ecology is reducing the dilution factor by ½ for reasons outlined above (Item 2, pages 14-15).

3. Performance-Based Effluent Limits for Discharges of Pentachlorphenol to the Puyallup River, Impacts to Endangered Species, Human Health Impacts, Consistency with Ecology's Strategy for Persistent Biocumulatve Toxics

Many commentors were concerned with potential impacts of pentachlorophenol discharges. Several commentors requested that Ecology not allow a mixing zone for pentachlorophenol, citing its bioaccumulative potential.

In response to comments, Ecology staff examined the last two years of effluent data available in Ecology's centralized electronic data base (January 1999-December 2000) for the Puyallup River discharge to see if a lower limit for pentachlorophenol is achievable. The time period contains the most recent data from the site that represents current practices and is also of sufficient duration to characterize data variability. Ecology also considered data collected in the Spring of 2001 but did not include it in the analysis. Ecology staff consider the Spring, 2001 data to be an anomaly, the result of the large amount of product stored on site during this time (Attachment A).

The data show that Cascade Pole has consistently achieved an effluent containing 13 ug/L or less of pentachlorophenol in its Puyallup River discharge from January 1999 through December 2000. A performance based limit of 20 ug/L is therefore feasible based upon this discharge record and Ecology methods for calculating performance-based limits. A performance-based limit of 20 ug/L is less than the effluent limit needed to meet acute water quality standards, 91 ug/L. Hence, Ecology is setting a performance-based effluent limit of 20 ug/L for pentachlorophenol.

In a letter dated June 22, 2001 to the United States Environmental Protection Agency, NMFS and the US Fish and Wildlife Service (the Services) suggested that a water quality standard of 0.2 to 2.0 ug/l would protect chinook salmon at sensitive life stages. At the 7Q10 with 10/1 dilution, this effluent limit of 20 ug/l would result in a concentration of 2.0 ug/l at the edge of the mixing zone. At normally higher flows, dilution would lower the concentration of pentachlorophenol. Hence, the effluent limit is protective of chinook salmon outside of the mixing zone.

Ecology staff also considered Ecology's human health criteria for pentalchlrophenol. The standard is 0.28 ug/L. The performance-based limit for pentachlorophenol (20 ug/L) is more restrictive than effluent limits Ecology would adopt (167 ug/L) to meet the human health standard for pentachlorophenol under an assumed allowed dilution credit of 25% of the mean harmonic flow in the river.

Ecology has recently adopted a strategy for addressing persistent bioaccumulative toxic compounds (PBTs). In general, the strategy seeks to reduce the discharge of such chemicals to the environment. In reducing the final effluent limit based upon the most recent representative data, Ecology is acting consistent with its strategy and the water quality standards that allow for a mixing zone for this and other pollutants.

The final permit allows 12-month compliance period to meet this final limit to coincide with the revised compliance period for total suspended solids (TSS). Although a compliance period is presumably not needed, controls on TSS will provide a level of assurance to the discharger that pentachlorophenol limit can be achieved consistently. The performance-based limits in the draft permit (63 ug/L) will be the interim limits for the first twelve months of the permit.

4. Performance-Based Effluent Limits for Discharges of Arsenic to the Puyallup River; Human Health Impacts.

As with chronic effects to aquatic life, many commentors were concerned about potential human health-related effects of the discharge. Others noted that techniques to develop human health-based effluent limits for continuous discharges might not be appropriate for this intermittent discharge. In response to comments, and with authority delegated by EPA, Ecology committed at the March 7 public hearing to consider effluent limits to meet human health-based water quality criteria in this permit.

Washington State has human health-based water quality standards for arsenic and pentachlorophenol. The primary route of exposure for both compounds at this site is through ingestion of fish and shellfish.

The discharge will not result in a violation of the human-health based water quality standard for pentachlorophenol. The human health-based pentachlorophenol standard in Washington State is 8.2 ug/l based upon consumption of organisms. The discharge limit of 20 ug/L will result in an average in-river concentration of 0.008 ug/l pentachlorophenol after dilution using the river's mean harmonic flow, 2386 cfs.

For arsenic, the issue is more complex. In 1992 the USEPA adopted risk-based arsenic criteria for the protection of human health for the State of Washington. The criterion for marine waters is 0.14 µg/L inorganic arsenic, and is based on exposure from fish and shellfish tissue ingestion. The freshwater criterion is 0.018 µg/L, and is based on exposure from fish and shellfish tissue and water ingestion. These criteria have caused confusion in implementation because they differ from the drinking water maximum contaminant level (MCL) of 50 µg/L, which is not risk-based, and because the human health criteria are sometimes exceeded by natural background concentrations of arsenic in surface water and ground water. [8]

[8] In l992, EPA promulgated the National Toxics Rule (NTR) to establish numeric water quality criteria for 12 States and 2 Territories including Washington, Idaho and Alaska, among others, that had failed to adopt certain water quality criteria consistent with section 303(c)(2)(C) of the Clean Water Act. One of the criteria EPA adopted for the states was the human health-based standard for arsenic. Since promulgation of the NTR, EPA approved state-adopted human health-based standards for arsenic in Idaho (6 ug/L, consumption of organisms) and Alaska (50 ug/l), drinking water and consumption of organisms) (62 FR 52925, 63 FR 10140). These new standards are 40 to 280 times higher than the federal standards adopted for Washington and the other NTR states. According to EPA, in their approval of the Alaska standard, "Subsequent to the promulgation of the NTR, a number of issues and uncertainties arose concerning the health effects of arsenic. EPA determined that these issues and uncertainties were sufficiently significant to necessitate a careful evaluation of the risks of arsenic exposure. Accordingly, EPA has undertaken a number of activities aimed at reassessing the risks to human health from arsenic" (63 FR 10140).

A regulatory mechanism to deal with the uncertainties associated with the arsenic standard is currently lacking. Consequently, the Water Quality Program, at this time, has decided to use a three-pronged strategy to address the issues associated with the arsenic criteria. The three strategy elements are:

1. Pursue, at the national level, a solution to the regulatory issues associated with arsenic.
2. Additional and more focussed data collection.
3. Data sharing with USEPA as they work to develop new risk-based criteria for arsenic and as they develop a strategy to regulate arsenic.

At this time, Washington NPDES permits contain numeric effluent limits for arsenic based only on treatment technology and aquatic life protection as appropriate.

Nonetheless, in response to comments regarding potential human health impacts, Ecology staff examined the last two years of effluent data available in Ecology's centralized electronic data base for the Puyallup River discharge to see if a lower limit for arsenic is achievable (Attachment A, Jan. '99- Dec. '00).

The data show that Cascade Pole has consistently achieved an effluent containing 280 ug/L or less of arsenic in its Puyallup River discharge. A performance-based limit of 400 ug/L is feasible based upon standard Ecology methods for calculating performance-based limits, and a performance-based limit of 360 ug/l is feasible based upon the discharger's data and limits set for other, similar facilities (Table 1, page 23). A performance-based limit of 360 ug/L is less than the effluent limit needed to meet acute and chronic water quality standards. Hence, Ecology is setting a performance-based effluent limit of 360 ug/L for arsenic.

The final permit allows 12-month compliance period to meet the final arsenic limit to coincide with other performance and technology-based compliance periods in this permit. Ecology will re-evaluate the effluent limit for arsenic when it re-issues this permit in 2006 or upon resolution of the standards issue.

5. Pollution Prevention

Commentors requested that Ecology require additional use of best management practices or pollution controls at the site to prevent the discharge of pollutants to receiving waters.

Ecology can require that a permittee employ control measures or best management practices if those measures and practices qualify as AKART or if they meet feasibility tests established under state and federal law.

Additionally, EPA, in its NPDES Storm Water Multi-Sector General Permit, adopted benchmark values that "represent a target concentration for a facility to achieve through implementation of pollution prevention measures." The benchmark values "are not effluent limitations and should not be interpreted as such." Rather, "these values are merely levels which EPA has used to determine if a storm water discharge from any given facility merits further monitoring to ensure that the facility has been successful in implementing a SWPPP."

Median discharge levels at Cascade Pole were generally below EPA benchmark values for copper (64 ug/l) and arsenic (169 ug/l) during 1999 and 2000, the period used to establish performance-based limits. However, in the months immediately following, discharge concentrations from Outfall 002 to the Puyallup River were two to three times EPA benchmark values.

Ecology is using its authority under state law to require Cascade Pole to implement applicable BMPs contained in the Ecology 2001 Stormwater Manual (Special Condition 16), update its stormwater pollution prevention plan, examine additional pollution prevention measures that might be used to prevent pollution, and implement those measures that are cost-effective in preventing pollution from reaching receiving waters. Cascade Pole will evaluate additional pollution prevention measures in Phase I and Phase II Pollution Prevention Engineering Reports that it will submit to Ecology during the first year of the permit under Special Condition 17 of the permit..

Cascade Pole may elect to forgo preparation of the Pollution Prevention Engineering Report in favor of implementing a set of BMPs to protect receiving waters. These BMPs are being used by other wood treaters in the region and are listed in Special Condition 16, Item C.

6. Application of Freshwater versus Marine Water Quality Standards

Commentors suggested that Ecology should set effluent limits to meet the more restrictive of the freshwater or saltwater water quality standard for the discharge to the Puyallup River. Developing effluent limits in this manner would not be consistent with state regulations. State regulations require Ecology to apply either freshwater standards or saltwater standards in estuaries. There is a condition in the final permit that requires the discharger to collect salinity data in the Puyallup River. Ecology will use the data to determine if the agency should modify effluent limits to meet marine water quality standards.

7. Bypass

Commentors noted that stormwater bypasses could impact near-shore sediments.

Cascade Pole historically discharged all stormwater from the west side of the property through the Bypass outfall. The installation of the diffuser and diversion of most stormwater flow to the diffuser has reduced the volume of stormwater discharged to the bypass area by about 90%. As a result, Cascade Pole has reduced the source of contamination to the bypass area. With continued source reduction, Ecology expects that the river can remediate residual contamination through natural attenuation. While a source remains, the potential for natural remediation decreases.

Ecology also notes that stormwater discharged through the bypass may cause a violation of receiving water standards in the river in the vicinity of Bypass outfall. If such a violation extended upstream with the incoming tide, these waters would impact the Puyallup River above Lincoln Avenue upstream of the discharge point. In that reach, the Puyallup Tribe of Indians has EPA-delegated responsibility for setting water quality standards and issuing water quality certification for certain federal permits and actions that have the potential to impact water quality.

The final permit requires Cascade Pole to develop and implement a Pollution Prevention Engineering Report to minimize discharges of pollutants in stormwater discharged to receiving waters, or to implement an alternative set of best management practices that will reduce discharges of pollutants from all outfalls. Ecology is also requiring Cascade Pole to develop and implement a sediment impact study for the bypass area to investigate the extent of historic sediment contamination. The sediment study will not be required if stormwater bypasses are directed to an alternative discharge location that does not impact Puyallup River sediments. In that case, the source would be completely removed and the river would likely remediate itself. However, the Department will solicit comment from the City of Tacoma, the Port of Tacoma, the Puyallup Tribe of Indians and other interested parties before approving any plan to divert waters to the City of Tacoma storm sewer.

8. Technical Concerns with the Mixing Zone Analysis

Commentors expressed concern with technical aspects of the mixing zone analysis, in particular:

- The width of the river relative to the mixing zone. The width of the river is a concern as WAC 172-201A limits the mixing zone width to 25% of the estuary width at the design or critical condition.
- Assumptions regarding water velocities in the river, temperature of the discharge and bay waters, and salinity of the wedge.

Width of the River: The final permit requires Cascade Pole to achieve compliance with this width requirement for the final effluent limits using the 7Q10 critical condition.

Additionally, at the request of Ecology staff, City of Tacoma engineering staff queried the City's Geographic Information System and report that the river width at the location of the diffuser at low water and unreported flow is 460 feet. Ecology staff have visited the discharge site at low tides and believe that the river conditions represented by the City's GIS data are sufficiently close to the modeled flow condition (2510 cfs) to be of use. The width of the mixing zone is 110 feet at a distance of 20 feet from the diffuser at the modeled flow. Therefore, the mixing zone used to set the interim limit for chromium complies with the width requirement of WAC 173-201A as the 110-foot width is less than 25% of the river width of 460 feet reported by the City

Assumptions in the Mixing Zone Analysis: The final permit establishes a mixing zone based upon an alternative flow in the river, rather than results of the mixing zone analysis. As a result, concerns with this analysis, while noted, are not germane to the final permit limits.

For the interim limit of chromium, Ecology acknowledges that the mixing zone analysis is not based upon a calibrated model, and that water velocity, salinity and temperature are factors in calculating mixing zones. Several model parameters, such as water velocity, were calculated or estimated rather than measured. Mixing zone analyses commonly rely on calculations or estimates for model parameters because it is often not possible to obtain measurements at the critical condition during permit development. The model salinity values at high, flood and ebb tide may not be accurate given data collected by the USGS (Ebbert, 1987). However, the salinity estimates are accurate for low tide (freshwater) conditions, the critical condition used to develop the effluent limit. Hence, Ecology staff consider the resulting interim effluent limit for chromium to be valid for the critical condition.

9. Background Concentrations Used to Calculate Effluent Limits at Outfall 001 (Lincoln Avenue Ditch/Wetlands)

Several commentors were concerned that Ecology did not incorporate background concentrations into the calculation of effluent limits for Outfall 001. Ecology acknowledges this concern and notes that the permit contains a provision for Cascade Pole to collect background data for this discharge. Ecology may revise the effluent limits for this outfall when this permit is re-issued in 2006 based upon new data.

10. Backsliding

Several commentors suggested that this permit violates the anti-backsliding provision of the Clean Water Act as the interim and final permit limits in this permit are less restrictive than the final permit limits contained in the previous permit.

The previous permit established final effluent limits that were based upon meeting water quality standards without a mixing zone. Ecology delayed implementation of these limits for the life of the permit in favor of interim limits. The previous permit also established that alternative final effluent limits could be set in this permit based upon the results of the AKART and Mixing Zone studies. Such limits are consistent with CWA Section 402(o) (anti-backsliding) that allows for a less stringent effluent limit in a new permit, "if information is available which was not available at the time of permit issuance (other than revised regulations, guidance, or test methods) and which would have justified a less stringent effluent limitation at the time of permit issuance… ."

Had the AKART and Mixing Zone studies been available at the time the previous permit was issued, they would have justified a less stringent effluent limit than the final permit limits contained in the previous permit. As a result, this permit is consistent with the anti-backsliding provisions of the Clean Water Act.

11. Application of Existing Laws and Regulations

Many commentors requested that Ecology apply existing law and regulation in issuing this permit. Some commentors were concerned that Ecology would not grant a mixing zone due to the listing status of chinook salmon and bull trout.

Ecology is issuing this permit and approving a mixing zone consistent with existing state law and regulation. The final effluent limits for toxic compounds contained in this permit are within the range of effluent limits for toxic compounds established for other wood-treating facilities in Washington (Table 4).

Table 4
Comparison of Final Effluent Limits
for Wood-Treating Facilities

	Outfall	Arsenic	Copper	Chromium	PentaCP
Allweather Wood	001	340	36	48	--
Washougal	003	340	254	605	--
Exterior Wood Washougal	001	140	160	210	
Western Wood	001	360	90	100	
Sumner, WA	002	360	90	100	
Oiser Co	001	--	--	--	9
Bellingham	002	--	--	--	9
Cascade Pole	001	360	159	138	81
Tacoma	002	400	156	137	20

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63 FR 10140 Final Rulemaking to Withdraw the Applicability of Federal Arsenic Human Health Criteria To the Waters of Alaska

64 FR 14308. Endangered and Threatened Species; Threatened Status for Three chinook salmon Evolutionarily Significant Units (ESUs) in Washington and Oregon, and Endangered Status for One chinook salmon ESU in Washington, Final Rule.

64 FR 58909. Endangered and Threatened Wildlife and Plants; Determination of Threatened Status for Bull Trout in the Coterminous United States, Final Rule.

65 FR 7764. Designated Critical Habitat: Critical Habitat for 19 Evolutionarily Significant Units of Salmon and Steelhead in Washington, Oregon, Idaho, and California. Final Rule

65 FR 42421. Endangered and Threatened Species; Final Rule Governing Take of 14 Threatened Salmon and Steelhead Evolutionary Significant Units (ESUs).

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Attachment A (to Appendix E)

Site Location Map
(Source: SECOR International, Inc. 1998.
Mixing Zone Study Report, Cascade Pole and Lumber Company.)

Water Quality-Based Permit Calculations
(Copper and Chromium)

Performance-Based Permit Calculations
(Arsenic and Pentachlorophenol)

CPLC Toxics Data
1999-2001

Provisional Data Graphs

Puyallup River at Puyallup &
Lake Tapps Diversion at Dierenger (Lake Tapps Outflow)
Week of July 10, 2001